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Research was conducted regarding the lack of information about (1) the relations of open-closed mindedness (dogmatism, authoritarianism, and rigidity) to reactions to a social studies methods course; (2) the possible biasing effects of drawing samples of teacher education students from different groups, subcultural and educational; and (3) the comparative central tendencies on measures of open-closed mindedness of teacher education students in the U.S. and in Germany. A correlational study was made of F-Scale, Dogmatism Scale, and Gough-Sanford Rigidity Scale scores of three social studies methods classes at one university, of a national sample of teacher education students on nine campuses, and of German students in three institutions. Differences between the scale means of American and German samples were significant. Comparisons of teacher education students from different universities confirmed the importance of religion as a sampling variable, but data provided little evidence that age, college class, sex or commitment to elementary or secondary education are potent variables for anticipating variability in open-closed mindedness. Teaching major appeared to be related to the scores, and thus a matter of consideration in drawing teacher education samples. There was no evidence that students in teacher education are more authoritarian or dogmatic than university students in general. (Included are a 345-item bibliography and discussion of the validity of the F- and D-Scales.) (JS)

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OPEN-CLOSED MINDEDNESS OF COLLEGE STUDENTS IN TEACHER EDUCATION

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and
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I: OPEN-CLOSED MINDEDNESS AND TEACHER EDUCATION--THE PROBLEM

The research reported on the following pages is related to two types of endeavor: The first is the training of prospective teachers of the social studies; the second is the definition of populations in studies of college students in teacher education. The common thread making these two areas compatible in one research study is a concern with dogmatism--the open-closedness of belief systems--as it relates to teacher education.

Social studies educators have long proclaimed the central role of instruction for critical or reflective thinking in the public schools. Nevertheless, training programs for social studies teachers do not include courses that would give the prospective teacher a conceptual framework from which to teach his students to think in a more systematic manner (see, e.g., Ballinger, 1963). Logic courses are, for example, not typically required in teacher preparation programs, and there are few other courses at the university that focus on thought process rather than content. Those that do focus on process, such as courses in educational research, are usually graduate courses. In any event, they frequently are of little relevance to those problems about which teachers want their students to reflect.

The social studies curriculum and methods course universally required of the prospective social studies teachers provides one place where instruction might focus on analytic frameworks appropriate for the social studies curriculum. In order to use the course for that purpose, however, the instructor would have to abandon some traditional shibboliths of teacher education--for example, that it is important that methods courses teach the prospective teacher to plan lessons and units. Moreover, if the prospective teacher is to properly integrate an analytic scheme into his own conceptual frame and if he is to experience models of teaching appropriate to the involvement of students in thinking, the traditional college lecture approach to teaching would probably have to be largely abandoned in favor of a discussion technique (see, e.g., McKeachie, 1963, pp. 1126-27).

The research in this report stems from an effort to depart from the traditional pattern of social studies methods courses in order to do two things: (1) concentrate on forcing the students to examine the assumptions underlying the curricular decisions they would be making as social studies teachers (such as those about the nature of democracy), and (2) help prospective teachers to explore the reflective competencies that might be helpful in teaching their students to analyze public issues. Class sessions were largely discussions of readings with socratic-type teacher-student interactions, with few lectures.

Not too surprisingly, perhaps, the students' reactions to the course were mixed. Reactions did not, however, seem to be evenly spread over a a continuum of favorableness--non-favorableness, but tended to fall into dichotomies. Some students were quite disturbed by the course. It was obvious to them that the course was not giving them "practical" preparation for their first confrontation with the students whom they would face in their practice teaching within a quarter or two. Moreover, the discussions were frustrating because ready answers were not provided to be written down in neatly organized notebooks. As one student wrote on an evaluation form, "The class is unfair because we are tested on how well we think instead of what we know." Other students reacted positively to the course. They remarked that it was one of their first opportunities to think in a college course, instead of simply memorizing lecture notes and underlined sentences in a textbook and then regurgitating them on tests. These same students frequently commented on their previous lack of awareness of the complexity of curricular decision-making in the social studies and their rejection of the traditional history oriented, read-and recite pattern of social studies instruction. The tendency for students to find the course interesting or to be disturbed by it was reflected in their evaluations of the instructor obtained each quarter.

McKeachie (1963) has noted that instructors who depart from the role expected by college students are likely to be rated lower than more conventional instructors. He also suggests that while the relationship between student satisfaction and learning tends to be low, instructors usually would like their students to have "warm feelings" about their class room experiences. There even is some evidence that students with such feelings may be more likely to be interested in learning more in the area. Other work by McKeachie (1961), as well as by Oliver and Shaver (1962, 1966; Shaver and Oliver, 1968), suggests that the differing reactions of students to a course may be related to differences in personality characteristics.

In reflecting about the social studies course to which the students were reacting so diversely, it seemed clear that it did make certain demands. Students were required to shift their conceptions of the proper instructor role. Moreover, the instructor did not provide a clear model of authority as the lecturer so often does. The analysis of assumptions underlying curricular decisions called for an openness in belief systems, and the concepts of reflective thinking that were taught emphasized a tentative approach to beliefs and the willingness to tolerate conflicting values (see, Oliver & Shaver, 1966, Chapter 7).

Rokeach's work on dogmatism (1960) has provided the Dogmatism Scale, "designed to measure individual differences in the extent to which belief systems are open or closed" (Rokeach, 1960, p. 19). The Dogmatism Scale grew out of earlier work in the area of authoritarianism out of which came the F-Scale (Adorno, et. al., 1950), frequently criticized as a measure of authoritarianism of the political right rather than a general measure of authoritarianism (e. g., Rokeach, 1960; Christie & Jahoda, 1954). The variables measured by both scales seemed likely to be related to the reactions of students to the revamped social studies curriculum and methods course. Rokeach also used the Gough-Sanford Rigidity Scale in attempting to discriminate tenacity of individual beliefs from the tenacity of belief systems. That scale also held promise for giving a more complete view of tendencies toward lack of flexibility and openness that might relate to reactions to a mode of instruction. The Gough-Sanford Scale seemed particularly appropriate because a common complaint of those who disliked the course was a lack of specificity in assignments and in information to be recorded in notes. There are in the literature no reported studies dealing directly with the relationship of dogmatism, authoritarianism, and cognitive rigidity to reactions to a new course emphasizing analysis. This lack of information is the basic problem with which the research was initially concerned.

As already noted, however, the project had a multiple thrust. Working with established groups--such as students signed up for or assigned to class periods--rather than random selection and assignment is the common *modus operandi* of educational researchers. This was, as already indicated, the case with the research to be presented in this report. Generally, researchers make the assumption that their "available" samples do not deviate significantly from population parameters. Unfortunately, this assumption is rarely checked.

Evidence, to be noted in the review of literature, indicated that personality test scores for the particular sample of students with which the proposed study was to be carried out would likely be biased (in the sense that repeated sampling from the group would not produce distributions clustered about the population mean). Previous studies had indicated that authoritarianism and dogmatism are related to religious affiliation. The central tendency of our sample, coming from a state university in Utah, could be expected to be positively skewed on the scales because fundamentalism, such as that of the Latter-Day Saints (Mormon) Church, has generally been positively related to scores on the F- and D-Scales. However, no findings have been reported on the relationship between the scales and religious fundamentalism with students in teacher education. Yet this could be an important factor as researchers draw samples of students from different sub-cultures. Moreover, reported evidence was inconclusive on the relationship of the F- and D-Scales to factors such as the level of teaching (elementary or secondary) anticipated and the subject area being prepared for. The lack of information was a problem for this research. Data about the fluctuation of F-, D-, and R-Scale scores as other sample characteristics varied and on the relationship of these scales to other information about teachers seemed likely to provide information of use to other researchers, who might want to judge the impact of bias on their samples.

One other auxiliary concern became the subject of the project's investigations. Common stereotypes include the notion that Germans are particularly authoritarian. However, evidence as to the relative authoritarianism of comparable groups of Germans and Americans, such as prospective school teachers, is lacking. When an opportunity to administer the Dogmatism, F-, and Gough-Sanford Rigidity Scales to German teacher education students became available through the services of a colleague born and raised in Germany, the opportunity to obtain comparative data was seized upon.

The study, then, was aimed at three related problems: The lack of information about the relationships of dogmatism, authoritarianism, and cognitive rigidity to reactions to an "innovative" course; the lack of data to use in establishing whether a particular sample was biased on measures of dogmatism, authoritarianism, and cognitive rigidity ; and, the lack of comparative data on dogmatism, authoritarianism, and cognitive rigidity of American and German students in teacher education.

II: AUTHORITARIANISM AS A VARIABLE IN EDUCATIONAL RESEARCH

The history of the F-Scale is well known among social psychologists. First reported in the monumental book, *The Authoritarian Personality*, (Adorno, Frankel-Brunswik, Levinson & Sanford, 1950), the F-Scale, intended to measure "implicit antidemocratic trends," has come to be called the Authoritarianism Scale. Although the impetus for the study by Adorno and his colleagues was the horrifying manifestations of prejudice in Germany prior to and during World War II, the groundwork had been laid in studies by people such as Stagner (1936; 1954), Maslow (1943), Edwards (1941, 1944), and Fromm (1941).

Probably no other research report has been so prolific a source of further research progeny. In a review of research stemming from *The Authoritarian Personality* up to 1955, Titus and Hollander cited 64 studies, while Christie and Cook (1958) reviewing research through 1955-56 cited 230 reports. Few works have had a greater contemporary impact on professional and lay people (Christie & Cook, 1958, p. 171), probably because of the social climate of the times (Brown, 1965, p. 478). There is no reason to dispute the claim by Titus and Hollander (1957, p. 47) that no other personality variable has been as widely used in research. Titus and Hollander (1957) reviewed studies relating the F-Scale to prejudice, political attitudes, family ideology, teacher attitudes, attitude change, social perception, rigidity, neuroticism, minority group membership, leadership, group behavior, and subcultural differences. In their more extensive review, Christie & Cook (1958) discussed the F-Scale under headings such as political attitudes, child rearing, inter-personal behavior, prejudice, psychopathology, and minority group membership. They also included a section in which they reported studies relating F-Scale scores to miscellaneous variables ranging from agreement with the position of the Catholic Church to ego strength and self concept.

*Studies Since 1956**

Since the Titus-Hollander and Christie-Cook reviews,research with the F-Scale has continued at a rapid rate. Although the original impetus for the authoritarian personality studies was a concern for fascism and its rather extreme political-social ramifications, it is not surprising that the F-Scale has been applied to the study of persons with less extreme political positions. For example, a study by Harned (1961) indicated that high authoritarians tend to be more oriented toward formal organization and less ideological in their relations to political parties than low authoritarians. Zippel and Norman (1967) found that supporters of Johnson and Goldwater in their sample did not have different mean F-Scale scores, although those who switched parties did have higher mean scores. One study found supporters of Stevenson and Humphrey to have lower F scores than supporters of Faubus and Johnson (Wrightson, Radloff, Harton & Mecheriskoff, 1961). Remmers and Steinberg (1954) found a slight correlation between F-Scale scores and political party (Republicans having higher scores), while, among Egyptians, negative correlations have been found between authoritarianism and liberalism (Melikan, 1959).

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*The review that follows will concentrate on studies using the F-Scale since the Christie-Cook and Titus-Hollander reviews, although prior studies which are particularly relevant will occasionally be cited. Our review is more extensive than would be strictly necessary as background for the study. The intent has been to provide an up-to-date compendium of F-Scale (and Dogmatism Scale) studies.

Notions about the relationships between conformity and how people relate to power have also prompted further studies. Conformity has been found to be slightly, although significantly, related to authoritarianism (Vaughn & White, 1966), unrelated (Hardy, 1957; Endler, 1961), and dependent upon the reasonableness of the position advocated as well as the prestige of the source (Johnson & Steiner, 1967). Wells, Weinhert, and Rubel (1956) reported that, in judging who was at fault in an auto accident scent, high F scorers (on Gough's 30 item form) were more susceptible to pressure by confederates. Weiner and McGinnes (1961) using students in an introductory psychology course found that when asked to judge whether a face projected on a screen was smiling or not, high and low F scorers did not differ significantly in conformity to confederate pressures. This finding corresponds with that by Baron and Arenson (1967) that high F scorers did not differ from low F scorers in susceptibility to social influence or in tending to gamble in a gambling game. As is so often the case in research with the F-Scale, differing subjects and different tasks make interpretation of divergent findings difficult.

Smith (1967) investigated authoritarianism as it related to power behavior in triads. Wilkins and DeCharms (1962) found high authoritarians to rely more on external power cues in describing other persons, and to distinguish more sharply between persons on the basis of power cues such as socio-economic status. Preference for greater departmental control of college instruction was significantly related to F-Scale scores in a sample of college students (Bendig & Hountras, 1959). F-Scale scores have also shown a positive correlation (r = .56) to acceptance of military ideology as measured by a Military Ideology Scale (French & Ernest, 1956).

Along the same lines, subjects who were obedient when told to give a high voltage shock to a fellow subject had a higher mean F-Scale score than those who defied the command (Elms & Miligram, 1966). Berkowitz and Lundy (1957) found that high F-Scale scorers tended to be influenced by authority figures when asked to state opinions on matters such as movies and tariffs. Harvey and Beverly (1961) reported that in an investigation of the effect of role playing on concept change, there was a greater effect on high authoritarians, with the status of the source also having a greater effect with the high F group.

Weitman (1962) found pro-authoritarians (those concerned with authority and obedience) to have higher mean F-Scale scores than anti-authoritarians and non-authoritarians. However, in a later study (Weitman, 1964), conformists, as determined by four tests including the F-Scale, did not differ significantly from rebels and independents in their responses to an incomplete sentences scale. Rudin (1961) found a nonsignificant relationship between scores on the F-Scale and scores on his Authority Scale. LaGaipa (1957) found that cartoons dealing with aggression toward authority were seen as less humorous by high F scorers under low ego involvement conditions, but more humorous under high ego involvement conditions, than was the case with the low F scorers. Lipetz and Ossorio (1967) reported that low authoritarians were more hostile than were high authoritarians toward conditions in which they interacted with a high status target.

In an investigation of aggression toward out-groups (Epstein, 1966), subjects with high F-Scale scores were more aggressive than those with low F scores. Although a negro model generally elicited greater aggression (degree of electric shock administered was the criterion), the effect was greater among low F subjects. The lower aggression evidenced by high authoritarians may be a function of a stronger defense mechanism. This conjecture is supported by the findings of Katz and Benjamin (1960) that in biracial work groups, high authoritarians rated negroes higher than did low authoritarians.

The review by Titus and Hollander (1957) noted that no clear cut relationship between anxiety and authoritarianism had been established. In an attempt to clarify the situation, Davids and Eriksen (1957) administered the F-Scale and the Manifest Anxiety Scale to a group of naval enlisted men. No significant relationship was found. Noting that their Navy men had a significantly higher mean F-Scale score than a group of college students, Davids & Eriksen concluded that the varying relationships found between the F-Scale and indices of neuroticism are likely due to the effects of differing socio-cultural settings.

Research since 1956 has confirmed the results of studies reviewed by Christie and Cook (1958) in regard to race and authoritarianism. Negroes seem to have higher mean F-Scale scores than whites according to studies with a college sample (Kelman & Barclay, 1963), graduate students in education (carried out before the Christie and Cook review, but not reported in it) (Remmers & Steinburg, 1954), and a large (N = 2079) nationwide sample of high school and college students (Greenburg & Fare, 1959). The correlation between F scores and scores on the E- (ethnocentrism) Scale have been found to be lower for a group of negroes than for whites, suggesting sympathy for other minority groups (Taylor, 1962).

Other studies have related the F-Scale to an incredible variety of variables. Authoritarianism scores have been found to be correlated with parental attitudes toward the authoritarian control of children (Zuckerman & Oltean, 1959). Mothers of schizophrenics scored higher on the F-Scale than did mothers of nonpatients, while the patients and their mothers did not differ (Divorin & Wyant, 1957). With a sample of mothers and second and third grade children, the psychological adjustment of children of authoritarian and equalitarian (as measured by the F-Scale) mothers did not differ (Kent, 1965). However, there were indications of beginnings of differences in the personality functioning of the two groups of children.

Attitudes toward old people were unrelated to F scores (Kogan, 1961), but authoritarianism was found to be related to scores on scales measuring open subordination of women and chivalrous attitudes toward women (Nadler & Marrow, 1959). And, Budner (1960) found F-Scale scores to be negatively correlated with attitudes toward socialized medicine in a sample of medical students. Budner's findings agree with those of Mohler (1953), but disagree with those of Libo (1957).

Among other studies, Kidd and Riviore (1965) found a curvilinear relationship between F-Scale and acceptance of fantasy scores. Eliasberg and Steward (1961) found authoritarianism to be highly related (r = .445) to ratings of pornography in art. Jacoby (1967) related authoritarianism to anxiety and birth order, while Bergum and Lehr (1963) investigated authoritarianism and vigilance performance and Marcia (1967) investigated authoritarianism and ego identity. In a study by Kimbrell and Blanchard (1964), persons discharged as ward attendants in a mental institution had lower F-Scale scores than those employed.

Singer (1961) reported that verbal reinforcement affected scores on the F-Scale, and Kinnick and Plattor (1967) reported that an eleven-week institute dealing with the problems of school desegregation not only brought about greater tolerance and acceptance of negroes and desegregation, but resulted in the expression of less authoritarian attitudes. Heist (1960) found that students attending colleges ranked high on a productivity criterion had lower mean F-Scale scores than those attending colleges ranked low. Also, a significant, but low, positive correlation has been found between F-Scale scores and preference for television lectures in a general social science course (Janes, 1964).

Alper, Levin, and Klien (1964) reported findings supporting the notion that high authoritarians tend to be moralistic (as did Smith, 1965), but not supporting the idea that low authoritarians tend to be humanistic. (Interestingly, Eisenman, 1968, has reported that instruction about the authoritarian personality in introductory psychology courses significantly reduced the severity of the subjects' moral judgements. Williams (1963) found high F subjects to be more willing than low authoritarians to send troops to Cuba to recover a hijacked plane. Trusting and trustworthiness were negatively correlated with authoritarianism in a study by Deutsch (1960).

A significant correlation (r = .31) was found between rejection by peers (high school students) and F scores (Frymier, 1959c). But Eisenberg (1966) did not find a significant relationship between depression and authoritarianism.

Burgess (1968) reported that girls who later chose atypical vocations had significantly lower F-Scale scores in junior high school than either boys or girls who later chose typical vocations. Becker (1964) investigated the relationship between authoritarianism and choice of a marriage mate. In a study by Ramirez (1967), Mexican-Americans scored higher on the F-Scale than middle-class college students. Ramirez also found a significant positive relationship between F-Scale scores and agreement with Mexican family values.

Of the great variety of studies utilizing the F-Scale, some are particularly relevant to a concern with the effects of selection bias on F-Scale scores. A brief review of these studies is in order.

Age, Education and Authoritarianism

Despite the common folklore that older people are more conservative and authoritarian, researchers have not set up studies specifically to investigate the relationships between authoritarianism and age. Any correlations reported are incidental products of the study of other variables. This creates some problems of interpretation, as designs are not set up to get at any age-authoritarianism relationship. Often the result has been a confounding of age and education. As an example, Bendig and Hountras (1959) reported that, although age was not a consideration in their design, graduate students tended to have lower mean F-Scale scores than undergraduates ($p < .10$).

The picture in regard to the relationship between age and authoritarianism is a confused one. Plant (1965) reported that, with a sample of people with varying amounts of college education who had been tested over a four-year period using Gough's modified F-Scale, authoritarianism decreased with age regardless of education. Kelman and Barclay (1963) reported that 17 to 19 year olds in their sample had a higher mean F-Scale score than those 20 years and older ($p < .05$). In a study using the Children's Authoritarianism Scale with a sample of upper middle class Jewish children ranging from nine to thirteen years of age, older children had significantly lower authoritarianism scores (Siegman, 1957). Lindgren (1962), with a sample of 150 laundromat customers, reported a nonsignificant correlation between scores on a seven item F-Scale and age. Jones and Gaier (1953) reported a nonsignificant correlation between a combined E-Scale and F-Scale score average for teachers, pre-teachers, and non-teachers at the University of Illinois.

On the other hand, Wilcox (1957) found older teachers, principals, and supervisors to be more authoritarian. Gregory (1957), with a sample ranging in age from 21 to 71, found a positive correlation ($r = .52$) between F-Scale scores and age. (Perhaps restrictions in age range have been the cause of some nonsignificant correlations.) However, in Gregory's sample the subjects from 21 to 30 years of age were almost all from college groups; the older subjects were from church groups. Therefore, age was confounded with college and church attendance. A significantly higher correlation between scores on a 25 item F-Scale and anti-semitism scores was reported for an older group in a Dutch sample (Weima, 1965).

Generally, authoritarianism scores appear to decrease with education, although Lindgren (1962) found a nonsignificant relationship between education and authoritarianism. Interestingly, Greenburg, Marvin, and Bivins (1959) reported that high school seniors in West Texas who planned on attending college were significantly less authoritarian than those not planning to do so. Eisenberg (1966) reported a decrease in F scores accompanying education with a sample of psychiatric and normal subjects. Plant (1966) found a decrease over a two-year (freshman to sophomore) period at San Jose State College. Fox (1965), using his own measure of authoritarianism, reported that seniors at a Catholic college had significantly lower scores than freshmen. Also, Cohn and Carsch (1954) found that mean F scores decreased with level of education in their sample of German workers. To what extent these results are due to education and to what extent they are due to experimental mortality is not clear. However, a finding by Trent and Craise (1967) indicates that education is a potent factor. They used a Nonauthoritarianism Scale based on the F-Scale. There were marked and significant increases (in autonomy) for subjects consistently in college for four years, with marked decreases for those consistently employed during the same period.

Sex and Authoritarianism

As with age and education, the relationship between sex and authoritarianism is not clear cut. In studies using younger subjects, there appears to be no difference between females and males. This has been the case with junior high school students (Burgess, 1968), high school students (Greenberg, Marvin & Bivins, 1959), a mixed high school and college sample (Greenberg & Fare, 1959), and with 9 to 13 year olds using the Children's Authoritarianism Scale (Siegman, 1957). However, Livson and Nichols (1957) found that there was little similarity in inter-item patterns for adolescent males and females, even though the mean scores were not significantly different.

At the same time, Bendig and Hountras (1959) reported that with a sample of college students, males had significantly lower ($p < .05$) F-Scale scores than females. With a sample of 282 negro college freshmen, females also had significantly higher ($p < .001$) authoritarianism scores (Kelman & Barclay, 1963). Wilcox (1957) reported that for his sample of teachers, principals, and supervisors, women were more authoritarian. Lambert (1960) found women to have higher scores on the average in a sample of principals and teachers, but apparently the trend was not significant. Perez (1966) did not find female teachers to be significantly higher than male teachers on the F-Scale, nor did Jones and Gaier (1953) find a significant sex difference. However, McGee's (1955) male teachers had a significantly higher mean F-Scale score than the female teachers, as did the male education students in Bendig and Hountras' (1959) sample. Although Kates (1959) reported a higher mean score on the F-Scale for males, it is not clear what the age level of his sample was. Nor was significance reported. To add to the confused findings, Denmark and Diggory (1966) reported that, in reacting to questionnaire statements based on discussions of the authoritarian personality, men approved authoritarian leadership more than did women.

Intelligence and Authoritarianism

In the reviews by Titus and Hollander (1957) and Christie and Cook (1958), a general negative correlation between F-Scale scores and intelligence was noted. Research since 1956 has supported this generalization. Siegman (1957) found low scorers on the Children's Authoritarianism Scale to have significantly higher ($p < .01$) verbal intelligence scores. Jacobsen and Rettig (1959) reported a negative correlation ($r = -.393$, $p < .001$) between F-Scale and total American Council on Education Psychological Examination scores ($r = -.224$ for quantitative and $-.262$ for verbal scores). Scores on the Abstract Reasoning Test of the Differential Aptitude Tests were negatively correlated ($p < .025$) with F scores for a group of sophomores from Yeshiva College (Klein, 1966). And, a negative correlation ($r = -.24$, $p < .05$) between authoritarianism scores and scores on the Naval General Classification Test was reported for a group of naval enlisted men (Davids & Eriksen, 1957).

Geographic Location, College, and Authoritarianism

As samples of subjects are drawn from different parts of the country, it is tempting to attribute differences among them to the factor of geographic location. Especially is this true when one is dealing with colleges located in rather distinct geographical areas. Undoubtedly, it is sounder to think of any variations as related to, if not due to, the subcultural variability from one area of the country to another which may or may not bear a functional relationship to geography. The importance of cultural variables is, for example, emphasized by the results, reviewed earlier, of comparing the F-Scale scores of negroes and whites. Some geographic areas do have a heavy concentration of negroes, and this might have serious implications for sampling if responses to the F-Scale were of concern.

Titus and Hollander (1957, p. 59) noted some studies dealing with "variation within the United States." Christie and Garcia (1951) found that a group of students at a university in a "southwestern city" were more acceptant of F-Scale items than a group of students from the University of California. In another study (Bass, McGehee, Hawkins, Young, & Gebel, 1953), southern students were found to have about the same mean scores as the California group, but a more restricted range. Using a sample of male students from the City College of New York, Davidson and Kruglov (1953) found birthplace and parents' occupation to be unrelated to F scores.

Since the Titus and Hollander review, other studies have investigated F-Scale variability within the United States. Frymier (1959a, 1960a), working with high school students, has found significant differences, in descending order, among the F-Scale means of subjects from Alabama, Florida, and Michigan.

A number of studies have used college students as samples. (A summary of available means is presented in Table 1[illegible] Kelman and Barclay (1963) investigated various factors related to the F-Scale scores of freshmen at a negro college in Maryland. They found a significant difference between negroes born in the South and those born in Maryland and other border states. Jex (1959) referred to a study by Stott (1954) in which students from the University of Utah were found to be more authoritarian than the students from the Universities of California and Oregon reported in earlier studies (Adorno *et al.*, 1950; Christie & Garcia, 1951). Greenberg and Fare (1959) investigated a number of factors which might be related to the authoritarianism of 2079 high school and college students from the east, midwest, and southwest. They found a significant difference in mean F scores for subjects grouped by section of country (eastern college students had a lower mean score than did southwestern college students), race, college major, and degree of blindness. In another study (Wrightson *et al.*, 1961), southern college students tended to have higher mean scores on the F-Scale, but regional differences were not clear cut.

Gaier and Bass (1959) investigated the correlations between the F-Scale and the E and Social Acquiescence Scales with students from Washbaine University in Kansas, the University of Maryland, and Louisiana State University. Correlations were similar for the Maryland and Kansas samples, but considerably lower for the L.S.U. sample. As is so often the case, no report of sampling technique was given, leading one to wonder if sample differences might be due to sampling biases unrelated to the subcultures supposedly represented by the samples. Moreover, the general failure to investigate the characteristics upon which the various college samples might differ, such as religious affiliation, makes the findings of research into subcultural variations difficult to interpret.

TABLE 1

Summary of F-Scale Means And Standard Deviations
From Previous Studies Using College Students

Author(s)	University	Mean	Standard Deviation
Adorno, *et al.* (1950)	U. of Oregon & U. of California	3.51	.92
Christie & Garcia (1951)	U. of California Southwest City U.	3.30 4.10	.83 .77
Stott (1954)	U. of Utah	4.07	.79
Kelman & Barclay (1963)	Maryland negro college	4.54	.84
Kerlinger & Rokeach (1966)	Michigan State U. Louisiana State U. New York U. (Div. Gen. Educ.) Combined	3.49 3.57 3.66 3.56	.63 .69 .79 .70

Religion and Authoritarianism

Religious belief, as an indication of social conventionalism and moralism, was a concern in the construction of the F-Scale (Adorno *et al.*, 1950, Ch. 7). Allport (1964) has discussed the possible relationships between authoritarianism, conformity, religion, and prejudice, as has Rokeach (1965). O'Neil and Levinson (1954) concluded that the E-, F-, Religious Conventionalism, and Traditional Ideology Scales consisted of overlapping factors. A relationship between F-Scale scores and religious belief and affiliation has continued to be borne out by research.

Titus and Hollander's review (1957) included only one study dealing with authoritarianism and religion. Levinson and Schermerhorn (1951) found authoritarianism to be greater among Catholics than among "conventional" Protestants, and greater among the latter than among "humanistic" Protestants (Unitarians and Congregationalists) and Jews. Christie and Cook (1958) cited only two related studies. Sarnoff (1951) found relationships between religious affiliation and attendance and his Scale of Jewish Authoritarianism. Interestingly, "both those who rejected all Jewish affiliations and those with the most complete Jewish identification tended to reject the authoritarian items" (Christie & Cook, 1958, p. 186). A study of the relationship of F-Scale scores to agreement with the position of the Catholic church (O'Reilly & O'Reilly, 1954) was also cited.

A variety of findings has since been reported. Only a few studies have investigated directly the relationship of church affiliation with authoritarianism. Rhodes (1960), with a sample of 1027 seniors from 8 Tennessee high schools, found that authoritarianism varied directly with the Protestant fundamentalism of his subjects. He also found that F-Scale scores were not independent of social status or the place of residence (rural or urban) of the students. There was greater variation among the F scores of Protestants than there was between Protestants and Catholics. Significant differences among mean F scores for groups of high school students from Alabama, Florida, and Michigan (in that order) (Frymier, 1959b), likely reflected religious differences. The Alabama group was 81 % Baptist; the Florida group was 49 % Baptist, 40 % other Protestants, and 6 % Catholic; and the Michigan group was 16 % Catholic and 83 % other Protestant. Wrightson, *et al.* (1961) reported that in their sample of college students from 9 colleges throughout the country, Jews and nonchurch members had lower mean F scores. (They also tended to be more cynical towards the motives of others.)

Reported church attendance has been the concern of some studies. Some studies have reported that church attendance and authoritarianism are not significantly related (Jones & Gaier, 1953; Frymier, 1959b). On the other hand, Remmers and Steinberg (1954) found a significant, if low, relationship ($r = .19$, $p < .01$), and Siegman (1957) discovered a curvilinear relationship between strictness of religious observance and Children's Authoritarianism Scale scores for his Jewish sample.

Several investigators have correlated F-Scale scores with scores on scales of religious belief. The Allport-Vernon Study of Values was used in two studies. Newsome and Gentry (1963) failed to find a significant relationship between school superintendents' scores on the Webster, Sanford, Freedman version of the F-Scale and the religious subscale of the Allport-Vernon instrument. However, Nolan (1963) working with high school seniors in a southwestern city and using the standard F-Scale, found a low but significant negative relationship ($r = -.163$, $p < .05$). The relationship was higher for males ($r = -.340$) than for females ($r = .023$). Gregory (1957) reported a correlation coefficient of .53 between F scores and scores on a test purported to measure orthodoxy or fundamentalism of religious attitudes. Correlating F-Scale and Religious Attitude Scale scores for a group of male undergraduates resulted in a coefficient of .53 (Siegman, 1962). And, a significant correlation ($r = .161$, $p < .05$) was found between F scores and scores on a Scale of Attitude toward Social Institutions (including the church) (Remmers & Steinberg, 1954).

Authoritarianism and Teacher Education

It has been argued (e.g., Friedenberg, 1959) that selective factors operate to attract into the teaching profession people who are conceptually "timid and constrained." There are some findings which support the plausibility of the argument. Friedenberg (1959) cited Travers and others (1953) as finding a tendency on the part of their sample of student teachers to be rigid when faced with unexpected situations and to lack "high level organizational ability." Bay (1967, pp. 82-83) referred to a study by Selvin and Hagstrom (1965) which found education students at the Berkeley campus of the University of California to be less libertarian than social science and humanities majors by a wide margin. A study by Adams, Blood, and Taylor (1959) indicated that college students in teacher education are more likely to be "docile" than are art and sciences majors. Trent and Craise (1967) found education students in a sample from Pennsylvania, the Midwest, and California to be lower than liberal arts students on the Autonomy Scale of the Omnibus Personality Inventory.

Several studies using the Edwards Personal Preference Scale (Jackson & Guba, 1957; Johnson, 1959; Merrill, 1960) have generally found education students and teachers to be higher on the Deference Scale and more orderly, abasing, and less autonomous than the liberal arts students used for standardizing the test. Cook, LeBold, and Linden (1963) carried out a factor analysis of the Edwards Personal Preference Scale and the Guilford-Zimmerman Temperament Schedule with a group of engineering and education students. They obtained a factor labeled "authoritarianism" with their education students which did not emerge with the engineering students.

Interestingly, there has been little reported research dealing with differences between education and other college majors on the F-Scale, and the few reported results do not follow the trend indicated by the non-F-Scale studies. Jones and Gaier (1953) found nonteachers at the University of Illinois to have significantly higher F scores than preteachers, with no difference between nonteachers and teachers. Unfortunately, few reports of research using the F-Scale report means and standard deviations for college major subgroups. This makes it impossible to compare new data on education students, such as from the present study, to that from previous studies.

If little has been done in comparing the F-Scale scores of education and other majors, how about research comparing education students or practicing teachers with different college subject majors? Again, little research is available. Comparisons of different teaching majors have not been reported. However, some comparisons of elementary and secondary school teachers are in the literature. Jones and Gaier (1953) and McGee (1955) reported no differences in mean F-Scale scores between elementary and secondary teachers, although the first study found that teachers who had taught at both levels scored significantly higher on the scale. In one study (Wilcox, 1957), the rank order of elementary teachers' mean F-Scale score was higher than for secondary teachers, but no test of significance was reported. The lack of research may be due to the lack of important implications of authoritarianism for the teacher's classroom role. However, a number of studies suggest that such is not the case.

Authoritarianism and Attitudes Toward Children

Would the relative authoritarianism of teachers as compared to other college majors or among students in different teaching majors have any serious implications for teacher education? Certainly teacher educators are concerned with the attitudes toward children which teachers take into the classroom. The ability to empathize with students, to put ones' self in their place would appear to be an important basis for positive attitudes toward students.

A number of studies have dealt with the relationship between authoritarianism and the ability to estimate the F-Scale scores of others, one type of empathetic behavior. Scodel and Mussen (1953) reported that subjects with high F scores showed a greater tendency to assign other people F-Scale scores like their own. High F-Scorers also were less accurate than were low F subjects in judging the authoritarianism of others. Crockett and Meidenger (1956), Kates (1959), and Simon (1966) also found that persons with high F-Scale scores showed a greater tendency to assume that others had similar scores, although in Simon's study authoritarianism was not related to the capacity to estimate its presence in other subjects. Not surprising, given the tendency of high F subjects to assign to others scores similar to their own, was the finding (Scodel & Freedman, 1956) that high F scorers were more accurate in estimating each other's F-Scale scores than were low F scorers. Frymier (1960b) discovered that prospective teachers erred rather seriously in predicting adolescent responses on many F-Scale items, and that a group of experienced teachers did no better (Frymier, 1962).

Rather than having his subjects estimate the authoritarianism of others, Bookbinder (1963) had them rate the personality traits of men and women in photographs. With this variation in task, he found no differences between high and low F scorers. Hart and Brown (1967) used the F-Scale as one of three tests for establishing three groups of student teachers with differing "levels of dogmatism." Although those subjects low in "dogmatism" were consistently more accurate in their judgements of their secondary school students, there was not a significant difference in accuracy of judgement among the three groups.

There is some reason to suspect that authoritarian teachers may have difficulty estimating the authoritarianism, if not the other personality characteristics, of their students. But, is there any data to suggest that attitudes toward children may be associated with authoritarianism? Lindgren (1962), with a sample of laundromat customers, found that scores on seven items from the F-Scale correlated negatively ($r = -.28$) with a measure of child centeredness. One group of investigators (Johnson, Johnson, & Lea, 1961) reported that the higher the F-Scale scores of their subjects, the more rigid the attitudes toward sex appropriate behaviors for children. In a study utilizing 126 mothers and their two-and-one-half year old children (Hart, 1957), a positive correlation ($r = .63$) was found between authoritarianism and nonlove for children scores. On the other hand, Gallagher (1957) reported a nonsignificant correlation between scores on the F-Scale and the Children's Attitude Scale, even though high F scorers did tend to score higher on the CAS. This divergent finding may be explained by the sample--59 social science majors in a child psychology course. Scores are likely to have been quite homogeneous on both scales, making it less likely that a significant correlation would emerge.

Authoritarianism and Attitudes Toward Discipline

There is some reason to expect that the higher their authoritarianism, the more likely it is that teachers will be punitive in their attitudes toward children's disciplinary failues. Elms and Milligram's (1966) high F scorers were more willing to administer electrical shocks than were their low F subjects. Cuthbert (1967) reported that high authoritarians tended to assign more responsibility to the wrongdoer in a story situation than did low authoritarians. And, Sherwood (1966) found that F-Scale scores differentiated between persons who expressed differing degrees of concern with blame and punishment after President Kennedy's assassination. He concluded that authoritarian adults have conceptions of morality and justice similar to the notion of "moral realism" which Piaget found in children from three to eight years old. Of particular interest *vis a vis* possible punitiveness toward children is the finding by Roberts and Jesson (1958) that although high and low authoritarians did not differ on extrapunitiveness independently of the status of "frustrators" in pictures, high authoritarians did tend to respond with personal hostility toward low status frustrators and with indirect or displaced hostility toward high status frustrators.

In line with the above findings are those by Desoto, Kuethe, and Wuderlick (1960) that high F-Scale scorers exhibited greater fear and suspicion, and by Deutsch (1960) that subjects classified as suspicious-untrustworthy had significantly higher F-Scale scores than those classified as trusting-trustworthy.

In addition, Hoffman (1963) found significant correlations between F-Scale scores and power assertion over their children for middle-class mothers and lower-class fathers. Zuckerman and Oltean (1959) found F-Scale scores to be related to inventory scores indicating favorable attitudes toward authoritarian control by parents ($r = .51$ for psychiatric patients, $r = .61$ for nurses). Kates and Diab (1955) using University of Oklahoma students, came up with similar findings. McCandless (1961, p. 385-390) reviewed authoritarianism and child-rearing practices. He concluded that research suggests a relationship between the harshness of child-rearing practices espoused and authoritarianism, especially where the individuals have direct personal involvement with children--as is the case with teachers.

Authoritarianism and Classroom Behavior

It seems clear that authoritarianism is related to other measures which have serious implications for the way in which teachers might behave in the classroom. In addition to the findings cited above, authoritarianism scores have consistently shown a high negative relationship ($r = -.46$ to $r = -.66$) with scores on the Minnesota Teacher Attitude Inventory (Del Popolo, 1960; Ofchus, 1963; Vacchiano, Schiffman, & Crowell, 1966) which is supposed to measure attitudes which predict how well the teacher will get along in his interpersonal relationships with students.

In related fields, Eager and Smith (1952) found significant correlations between camp counselors' scores on Sanford's modified F-Scale and children's selections of authoritarian items for the counselors on a "guess who" scale ($r = .53$ for boys, .33 for girls). In industry, Mowry (1957) reported that the F-Scale correlated with ratings of supervisors' success ($r = .49$ with $N = 20$).

Several studies using educators have involved indirect measures of behavior. Perez (1966) found an inverse relationship between authoritarianism and teachers' scores on a scale designed to measure disposition toward teamwork. In a study by Wilcox (1957), scores on a scale measuring conservative role orientation correlated (r = .74) with teacher and administrators' scores on the F-Scale. Titus and Hollander (1957) reviewed a study (Juul, 1953) in which equalitarian teaching attitudes of college seniors, as measured by a "How I Teach" inventory, were negatively related with F scores. Rowan (1963) found that scores on a limited projective test--the Teacher-Pupil Problem Situation Inventory--were associated with F-Scale scores. Hines (1956) reported discrepant findings. When principals and five teachers in each of 75 schools filled out a Principal Behavior Checklist which was later scored for authoritarian and democratic responses, neither score correlated significantly with principals' authoritarianism. Hines did find that F-Scale scores correlated significantly (r = -.38) with frequency of effective practices as judged by 10 education professors with administrative experience, but this finding probably tells us more about the orientations of the professors than about the principals' behavior.

Given the early reports by H. H. Anderson and his colleagues (Anderson & Brewer, 1946) that dominating behavior by teachers begets dominating behavior by students, it is not surprising that teachers' F-Scale scores have been found to bear a positive relationship (r = .63) to the number of social isolates in their classrooms (Gold, 1962). Nevertheless, attempts to relate authoritarianism directly to on-the-job performance by educators have met with mixed success, even though differences in leadership behaviors by high and low F scores were early established in the laboratory (e.g., Haythorne, Couch, Langham, & Center, 1956). McGee (1955), in a study of classroom behaviors such as dominative-intergrative and insensitive-sensitive, found a correlation of .58 between F-Scale scores and his observational estimates of authoritarian classroom behavior. Del Popolo (1960) also found scores on the Webster, Sanford, Freedman adaptation of the F-Scale to be negatively correlated (r = -.62) with frequencies on an Observation Checklist for Student Teachers. On the other hand, Ends (1966) reported that although F-Scale scores correlated with a measure of teachers' thoughts about the classroom, they did not correlate with classroom behavior. And Liu (1964) found little support for the supposition that the personal characteristics of student teachers (including as a variable the Webster, Sanford, Freedman Authoritarianism Scale) are related to teaching behavior. However, the only two significant relationships involved authoritarianism. Liu concluded that the less rigid, dominating, dogmatic, and/or autocratic the student teacher, the more alert, responsible, confident, and/or self-initiating his students were likely to be.

Authoritarianism and Thinking

The assumption is commonly made that if teachers are to teach children more effective modes of thought, they must be able to serve as effective models of thinking themselves. The possibility that high authoritarians are selected into teaching raises some interesting questions *vis a vis* the teacher's role as a teacher of thinking. In an earlier section of this review note was made of the consistent findings that authoritarianism is correlated negatively with scores on common tests of intelligence. DiVesta

(1961) in his review of research in learning discussed the tendency of authoritarians to be concrete rather than abstract and to come to conclusions without testing hypotheses. In addition, Tuckman (1965), working with a group of 208 soldiers, found F-Scale scores to be negatively related to the complexity and openness of integration of belief systems. Going beyond intellectual modes of thought to attitudes of mind especially relevant to the social studies, authoritarianism appears to be negatively related to world mindedness (Smith & Rosen, 1958). There also appears to be a low positive relationship between F scores and conservatism in risk-taking (Baron, 1968). And, logical consistency--at least in regard to ideas about education--has been found to be negatively correlated with the F-Scale scores of superintendents (Gowen, Newsome, & Chandler, 1961; Newsome & Gentry, 1963) and part-time college faculty (Gowen *et al.*, 1961).

Authoritarianism and the Methods Course

The general relevance of authoritarianism to teacher education is of interest for that part of the research presented in this report which deals with the characteristics of a nationwide sample of students in education courses. The more general review also provides a background for looking at the research which has implications for the reactions of students to a social studies methods course which departed from the traditional pattern of lecture and concern with planning lessons and units.

Authoritarianism and Evaluations of the Instructor. Past research makes it difficult to predict how authoritarians might react to the instructor of a methods course which not only departed from traditional conceptions of the course, but was taught in an open-ended way. Obviously, the open-endedness of the course might evoke negative reactions in students low in tolerance of ambiguity. Yet the findings in research relating F-Scale scores to tolerance of ambiguity have been equivocal, despite a theoretical expectation that authoritarians would be more demanding of certainty. Part of the difficulty has been the differing experimental definitions of ambiguity (Titus & Hollander, 1957), ranging from reactions to lights in a darkened room (Milton, 1957) to the number of blanks not completed in cloze passages (Honigfeld, Platz, & Gillis, 1964).

Studies in leadership are also of little help because of their inconclusive nature (Titus & Hollander, 1957). There is some evidence that high F scorers do prefer autocratic leadership in the Navy (Jones, 1954) as well as leader-centered discussions in university classes (Harmon, 1955). There are also findings which indicate that high authoritarians tend to be less critical than low authoritarians in their ratings of military leaders (Jones, 1954), stimulus persons in experiments (Kates, 1959), and parents (Phares, 1960). However, Maney (1959) found students' F-Scale scores were not significantly correlated with their ratings of 8 instructors in a Southern women's college. And, Sheffield and Byrne (1967) reported that authoritarianism did not have a significant effect upon judgements of the attractiveness of strangers varying in degree of similarity to the subjects' own responses to an attitude scale. Nor was the interaction between authoritarianism and similarity-dissimilarity significant.

Among other things, low F scorers seem to be more able to sort out the person's personal qualities from his performance in the role being judged. While it seems reasonable to expect that authoritarians would react negatively to an instructor who is not a lecturer-authority figure and to a course which is oriented toward opening and exploring issues of concern in social studies education, there may also be a tendency for the authoritarians to be uncritical in their judgement of any professional authority figure. F-Scale scores are therefore, not likely to be related to evaluations of the instructor in a modified methods course.

Authoritarianism and Learning. As already noted, F-Scale scores have generally been found to correlate negatively with intelligence scores. It would not be surprising, then, to find authoritarianism to be inversely related to learning. Stott (1954) reported a negative correlation between F-Scale scores and predicted grade point averages for University of Utah students, and Davids (1956) reported a correlation coefficient of -.60 for F-Scale scores and college grades. Linton (1967) found scholastic achievement on the provincial exams in Alberta to be inversely related to F-Scale scores. Oliver and Shaver (1963, 1966; Shaver & Oliver, 1968) found that F-Scale scores interacted with socratic and recitation teaching in affecting performance in an interview scored with categories based on the critical thinking concepts taught students in a two-year course. In another study (Neel, 1959), senior medical students who were high F scorers had more difficulty than low F scorers in learning material dealing with humanitarian philosophy and material judged to be ambiguous. F-Scale scores also were negatively correlated ($r = -.43$) with gains on the Minnesota Teacher Attitude Inventory during a six-week intensive teacher training course (Vacchiano *et al.*, 1966).

On the other hand, Bohlke (1960) reported that authoritarianism was not related to learning about India or to change in attitudes about India on the part of 225 college freshmen. Stotland and Patchen (1961) also reported the lack of a clear relationship between authoritarianism and the reduction of prejudice in an experimental setting. In other studies, F-Scale scores were not related to the learning of interviewing skills (Balensky, 1963) or the recall of nonsense sentences (Pyron & Kafer, 1967). Despite these discrepant findings, reviews of authoritarianism and learning (DiVesta, 1961; Harvey, 1963; Jackson & Strattner, 1964) have concluded that F-Scale scores generally bear a negative relationship to conceptual learning.

Cross-Cultural Studies of Authoritarianism

One aspect of the research to be presented in this report is the comparison of American and German education students. The F-Scale has been used in several cross-cultural studies. Melikan (1959) and Diab (1959) have found Arabs and college students from the Near East to have higher mean F-Scale scores than Americans. Niyekawa (1966) reported that Japanese high school students have higher mean F scores than American high school and college students in her sample. Caution in interpretation must be exercised because her Japanese sample is from rural schools, and based on American findings may be more authoritarian than an urban sample. Siegman (1962) found different relationships between F-Scale scores and religiousity for American and Israeli college students. And, in a particularly relevant study, a sample of German workers had a mean F score of 5.26, ". . higher than the mean score for any group thus far reported in the literature. . ." (Cohn & Carsch, 1954).

As Gordon and Kikuchi (1966) have noted, cross-cultural findings must be interpreted with caution. Even if the translation of items is accurate, differences in culture are likely to mean that an item will have different meaning from one culture to another. Niyekawa (1966) also warns about applying an American definition of authoritarianism to other cultures. At the same time, if the F-Scale is a valid measure of authoritarianism, it should pick up cultural differences. It is interesting, in the light of the cultural similarities between the United States and England, that a sample of engineering students from the two countries did not have significantly different F-Scale means (Peabody, 1961).

Validity

It may seem strange that discussion of the validity of the F-Scale has been left to the end of the review of research with the measure. However, the discussion of the scale's validity seems to be particularly appropriate in the context of the number of studies carried out with it. Also, a concern for validity makes an excellent transition to the next major section of the review dealing with the Dogmatism Scale.

Obviously, the wide use of the F-Scale noted by Titus and Hollander (1957) has continued to the present. Unfortunately, large numbers of studies do not insure validity. In fact, the number of equivocal findings raises serious questions about the scale's construct validity. Because of the tendency for psychological and educational researchers to use whatever sample happens to be handy (usually college students in introductory psychology courses) and because of the differing definitions of the variables to which the F-Scale has been related, it is difficult to determine whether the inconsistencies in findings are due to the invalidity or lack of stability of the scale or to the varying conditions under which it has been applied. For example, a finding that high F scorers in a furniture factory showed increased productivity with the obvious presence of researchers (Rosen & Sales, 1966) held true for workers from urban backgrounds, but not for workers from rural backgrounds (Sales & Rosen, 1967). Certainly, one of the contributions of the present study will be an indication of the importance of using samples that come from different colleges and, therefore, from different subcultures.

It is ironic that one of the consistent findings with the F-Scale--that of negative correlations with measures of intelligence--can be interpreted as raising questions about the validity of the F-Scale as a measure of authoritarianism. For as Cohn (1952) has pointed out, the negative relation of F-Scale scores to scores on intelligence tests may simply mean that more intelligent people are better able to figure out what the F-Scale is intended to measure, and so give more acceptable answers.

There have been methodological criticisms (Hyman & Sheatsley, 1954) of the studies (Adorno *et al.*, 1950) from which the F-Scale came and of the instrument itself. One of the basic questions raised about the scale has been whether or not it is over-saturated with the effects of response set. Christie and Cook (1958) have reviewed the literature on response set and the F-Scale. Continuing research (Messick & Jackson, 1958; Couch & Keniston, 1960; Peabody, 1961, 1966; Berkowitz & Molkon, 1964; McBride & Moran, 1967; Pedersen, 1967) indicates that acquiescence response set is a factor in authoritarianism as measured by the F-Scale, probably accounting for about 15 % of the variance. As Brown (1965, p. 514) recommends, researchers should seriously consider using F-Scale items balanced for yes and no responses. Yet, there seems to be no reason to discount authoritarianism scores obtained with the original Adorno *et al.*, (1950) measure.

The Christie-Cook review (1958) also dealt with factor analytic studies of the F-Scale. They concluded that the picture was cloudy, with a lack of consistency in the factors which had emerged and in inter-item correlations from one sample to the next. Since then, Krug (1961) has concluded on the basis of his factor analysis of the F-Scale that there is a highly reliable general factor, but there are also several multidimensional factors which are obscured in the total score. Bendig's (1960) factor analysis supports the notion of subtraits in the scale. Krug and Mayer (1961) also reported that the subscales of the Edwards Personal Preference Schedule and the Guilford-Zimmerman Temperament Survey did not have a great deal of overlap with the F-Scale, so seem to measure different factors. At least two other factor analytic studies of authoritarianism will become relevant as the Dogmatism Scale is discussed, for the D-Scale is a direct outgrowth of concern with the validity of the F-Scale.

III: DOGMATISM--A MEASURE OF GENERAL AUTHORITARIANISM?

As the researchers whose work finally resulted in the publication of the monumental *The Authoritarian Personality* explored the problems of assessing prejudice, it appeared that an indirect measure--one that did not involve the mention of any minority groups--would help to alleviate many problems of test administration (Adorno *et al.*, 1950, p. 222). The decision was to develop a scale to get at "antidemocratic tendencies," and the F-(Fascism) Scale (p. 224) was the result. Even with the use of a word (fascism) which certainly suggests authoritarianism of the political right, the F-Scale came to be regarded as a measure of general authoritarianism. At least one critique (Christie, 1954) in the review of *The Authoritarian Personality* edited by Christie and Jahoda (1954) was concerned with the utility of the F-Scale for detecting non-fascist, left wing authoritarians (pp. 130-133). Christie analyzed limited data from *The Authoritarian Personality* to conclude that left wingers (Communists and individuals attending the California Labor School) obtained low F-Scale scores, probably because of the rejection of "ideological cliches representative of the authoritarian right" (p. 133). And, he cited earlier studies by Raskin and Cook (1938) and Stagner (1936) to support his suppositions. The research of Coulter (1953) with English Fascists and Communists, as reported in Brown (1965), also adds confirmation to the claim that the F-Scale is a measure of fascist or right wing, and not left wing, political tendencies.

Undoubtedly, the most sustained and productive reaction to the notion that some measure other than the F-Scale was needed as a measure of general authoritarianism has been that by Milton Rokeach. His concern has resulted in the Dogmatism Scale (D-Scale); his book *The Open and Closed Mind* (1960) contains considerable discussion of the scale's validity--especially as distinguished from the F-Scale and from cognitive rigidity as measured by the Gough-Sanford Rigidity Scale.

Factor analyses leave little doubt that the F- and D-Scales are heavily loaded on the same factors (Ohnmacht, 1967a, 1967b). Moreover, Rokeach (1960, p. 121) reported that intercorrelation coefficients for the F- and D-Scales had ranged from .54 to .77 in his studies. Other researchers have reported a broader range of correlations between the instruments--from .46 (Vacchiano, Schiffman, & Crowell, 1966) to .82 (Pettigrew, 1958). Although high intercorrelations are to be expected if one scale is a general and the other scale is a specific measure of authoritarianism, the magnitude of some coefficients raises serious questions about the existence of dogmatism, as measured by the D-Scale, as a separate variable.

A factor analysis of the D-Scale by Vacchiano, Schiffman, and Straus (1967) indicated that item factors tended to form around Rokeach's (1960) definition of D-Scale items. This led the authors to conclude that the D-Scale had empirical validity. Another correlation, factor analytic study by the same investigators (Vacchiano, Schiffman, & Straus, 1968) has demonstrated that the D-Scale is essentially independent of scales taken from the 16 PF, the Edwards Personal Preference Schedule, the Tennesee Self-Concept Scale, and a Machiavellianism Scale. There also was a cluster of correlations which provided logical support for the concept of dogmatism. Some factor analyses have indicated that despite their heavy loading on common factors, the D-Scale is factorially discriminable from the F-Scale (Kerlinger & Rokeach, 1966) and from the F- and R-Scales (Rokeach & Fruchter, 1956; Fruchter, Rokeach, and Novak, 1958).

Rokeach (1960) also reported data substantiating the claim that authoritarians of the right and left will score high on the D-Scale, with authoritarians of the left not receiving high F-Scale scores. Barker's studies (1963) with New York City graduate students and Ohio State University juniors and seniors have lent support to the hypotheses that the F-Scale is biased toward authoritarianism of the right and that authoritarians of different political leanings will have similar scores on the D-Scale.

For some reason, response set has not become as salient an issue with the D-Scale as it has been with the F-Scale. Studies by McBride and Moran (1967) and by Korn and Giddan (1964) have indicated that acquiescent set makes contributions to D-Scale scores with positively scored items. Probably acquiescent set accounts for no more of the variability with D-Scale scores than with F-Scale scores--about 15 %.

Rather than being concerned with the effect of positively scored items, some researchers have investigated variations of the scale. Troldahl and Powell (1965) reported that a 20 item D-Scale yielded sufficient reliability ($r = .79$ as compared with $r = .84$ for the 40 item test) to justify its use in field studies, and Shupe and Wolfer (1966) concluded that a two-point form of item for the D-Scale was just as reliable, and easier to administer, than the six-point item.

Kemp and Kohler (1965) investigated the suitability of the D-Scale for use with high school students, and concluded that reliability coefficients were adequate ($r = .82$, test-retest after 2 months; $r = .92$ using the Rulon formula) to justify the scale's use at that age level. The need to update social and cultural items has been of concern (Frandsen, 1967). Also, one investigator has reported that subjects can vary their D-Scale scores when instructed to do so, with low D scorers being better fakers in the close-minded direction (Wolfer, 1967).

The history of the D-Scale is, of course, much briefer than that of the F-Scale. But, like *The Authoritarian Personality* and the F-Scale, Rokeach's *The Open and Closed Mind* and the D-Scale have stimulated much research. Among the many studies, dogmatism has been found to be unrelated to support of Goldwater or Johnson, but related to party switching (Zippel & Norman, 1967), related to reactions to the movie Dr. Strangelove (Roseman, 1967), nationalism (Terhune, 1963), time orientation (Zurcher, Willis, Ikard, & Dohme, 1967), binocular fusion of stimuli (Iverson & Schwab, 1967), recall of nonsense sentences (Pyron, 1967), attitude change during the preparation of belief-discrepant communications (Hunt & Miller, 1968), the number of personal problems and the reduction of problems through counseling (Kemp, 1961), and attitude toward educational media, but not to use of graphics in teaching (Hudspeth, 1966). Wrenn (1962) reported that being subjected to an initiation did not have a differential effect on the evaluation of groups by high and low dogmatic female subjects.

In business-related studies, Kamenshe (1966) found high dogmatics to be more resistent to change to a computer system in an insurance company, while Druchman's (1967) data suggested that high dogmatics would be more resistent to compromise in a bargaining situation.

Little evidence was found in a study by Nowak (1967) to support the claim that dogmatics behave differently in situations in which the perceived status of authority figures varies. On the other hand, Vidulich and Karmon (1961) reported that dogmatism and the status of an information source interacted in a group of female college subjects to significantly affect judgement shifts. According to a report by Powell (1962), high dogmatics have more difficulty than do low dogmatics in separating message source from message content. Becker (1967) found a curvilinear relationship between D-Scale scores and dependence on source in judging jokes. McGuckin (1967) found only partial support for the hypothesis that subjects would tend to indicate more esteem for critics of American foreign policy whose positions implied a cognitive type similar to that suggested by the subjects' dogmatism scores. In another study of message source, high dogmatics did not show any less retention of content presented by a negro, but they did evidence significantly less favorable attitudes toward the negro's message than did low dogmatism scorers (Miller & Roberts, 1965).

Attempts to relate Dogmatism Scale scores to various other personality variables have met with varying success. Norman (1966), with a group of sophomore female subjects, reported significant correlations for D and MMPI scores and between D scores and scores on the Taylor Manifest Anxiety Scale and the Barron Ego Strength Scale (the latter two at the .05 level of significance). Yet Zagona and Kelly (1967), using the same anxiety and ego strength scales and the D-Scale, found correlation coefficients to be nonsignificant with a sample of male and female introductory psychology students. A small (r = .083) but significant relationship has been found between D scores and self-acceptance in a group of high school students (Pannes, 1963). Korn and Giddan (1964) found a negative relationship (r = -.30) between Dogmatism Scale scores and the "well-being" score on the California Psychological Inventory. (The CPI "tolerance" and "flexibility" scores were also negatively correlated with D scores.) In a somewhat related study, Cummins (1966) found that disciplinary offenders and nondisciplinary students at Michigan State University did not have significantly different mean dogmatism scores.

Ehrlich and Bauer (1966) reported that, with a group of psychiatric patients, dogmatism correlated with work and social impairment, initial prognosis, and length of stay. With normal subjects, there are indications that dogmatics use sensitization and intellectualization, rather than repression or denial, as defense mechanisms (Byrne, Blaylock, & Goldberg, 1966). However, dogmatism has been found to be positively associated with denial of disability and negatively correlated with depression as a reaction to blindness (Hollenbeck & Lundstredt, 1966). De Grada and Ponzo (1967) reported that pessimists in their study had higher D scores than optimists.

Along a somewhat different vein of individual differences, the dogmatism of counselors has been found to be related to motor inflexibility (Riley & Aimlin, 1965), and the association between inhibition of motor response and dogmatism has been found to be stronger than between inhibition and socioeconomic status in seventh grade students (Anderson, 1962). Also, high dogmatics had higher galvanic skin response readings than low dogmatics when presented with issues with which they strongly agreed, mildly disagreed, or strongly disagreed (Snoek, 1967).

Age, Education, and Dogmatism

Of the many studies using Rokeach's Dogmatism Scale, some are particularly relevant to the present study. Where appropriate, the same headings will be used to indicate relevant areas of research as were used in the review of F-Scale studies. One of the concerns of the present study was with the relationship between dogmatism and age. Again, as with the authoritarianism review, age and education are considered together because they are usually confounded in research studies.

Several studies utilizing college students have found that dogmatism scores reduce during college attendance. These include studies with students in Michigan (Lehmann, 1963; Lehmann, Sinhra & Hartnett, 1966), in a New England university (Katz & Katz, 1967), and sociology students (Frumkin, 1961). Foster (1961) reported that there was a decline in dogmatism in a Catholic university, but it was less by comparison than in sectarian schools. Plant (1965) reported that for his sample, there was a decrease in dogmatism with age regardless of education. Plant (1966) has also reported a study in which both sorority and non-sorority women decreased in dogmatism scores over 2 years, with the sorority women showing a significantly greater ($p < .05$) decrease even though the 2 groups did not differ at the start. Of course, a basic problem with these studies using college samples is the lack of a control group. It is difficult to tell if education is having an effect or if decreases in dogmatism scores are due to experimental mortality.

Two contradictory findings with college-age subjects have been reported. Rabkin (1966) found that D scores and age were not significantly correlated in a group of 107 teachers in summer courses at the University of Washington. This finding may well be due to a restriction of range in age with a sample of teachers. The following finding is not so easy to explain, however. In a study involving 104 policemen who had attended college and 122 who had not (Smith, Loche,, & Walker, 1967), it was found that although the college subjects scored significantly lower on the Dogmatism Scale, those in the college group with ages from 25 to 29 had significantly higher scores ($p < .01$) than those from 21 to 24.

Research with below-college age subjects has produced negative relationships between education-age and dogmatism. This has been true for Anderson (1962) with subjects in grades 8 through 12 and Pannes (1963) with seventh through twelth graders.

Dogmatism has been found to be negatively correlated with age in 244 insurance company employees (Kamenshe, 1966), and with age and education in psychiatric patients (Ehrlich & Bauer, 1966). With few exceptions, then, education seems to be negatively associated with dogmatism, with the relationship between dogmatism and age less clear.

Sex and Dogmatism

Those studies in which male-female differences on the F-Scale were tested for significance have yielded equivocal findings. To this date, reports with the D-Scale have presented a somewhat clearer, if slightly clouded, picture. A number of studies have reported no significant differences between male and female subjects for a variety of groups: teachers attending summer school at the University of Washington (Rabkin, 1966), seventh through twelfth graders (Pannes, 1963) and eighth through twelfth graders (Anderson, 1962), psychiatric patients and therapists (Ehrlich & Bauer, 1966). In addition, it has been reported (Lehman, Sinhra, & Hartnett, 1966) that there was no difference between males and females in the amount of reduction of dogmatism scores during college.

On the other hand, Lehman (1962) found the males, in his sample of over 2000 entering freshmen at Michigan State University, to be more dogmatic than the females. In another study (Korn & Giddan, 1964), the correlation between dogmatism scores and verbal scores on the Scholastic Aptitude Test was -.18 for males ($P < .01$), but -.003 for females. Vacchiano, Shiffman, and Strauss (1967), in inspecting the factors for males and females emerging from their analysis of the items on the D-Scale, found indications that the D-Scale measures different dimensions for the two sexes. Alter and White (1966) suggested that the significantly higher mean D scores for males in their Utah sample might be due to a few items. Along with the possibility that males and females may be responding to the items in different contexts, the findings on sex differences in dogmatism scores are equivocal.

Intelligence and Dogmatism

Rokeach (1960, p. 190) reported that the correlation between scores on the Dogmatism Scale and intelligence (as indicated by "a rough measure"--the American Council on Education Test) was -.02, essentially zero. He went on to suggest (Rokeach, 1960, pp. 403-8) that because the D-Scale measures a kind of intelligence, the finding of no relationship with scores on commonly used intelligence tests calls for a rethinking of current concepts of the nature of intelligence. Christensen (1963) also found the correlation between ACE scores and D scores to be essentially zero. Long and Ziller (1965) found verbal scores on the SCAT to be independent of dogmatism scores for their sample of freshmen women at the University of Delaware, and Uhes (1968) reported a nonsignificant negative relationship between Dogmatism Scale scores and scores on the "g" factor of the General Aptitude Test Battery.

All of the data have not supported Rokeach's earlier finding, however. A negative correlation ($r = -.28$, $p < .05$) was found between dogmatism and scores on the Ohio State Psychological Examination (Ehrlich, 1961)--although Kemp (1962b), apparently referring to the same study by Ehrlich, reported the r to be -.001 (p. 11). Pannes (1963) reported a negative relationship ($r = -.106$, $p < .01$) between dogmatism and "IQ" (the test used was not reported). Using the verbal score from the College Qualification Test, small but significant relationships with dogmatism scores have been obtained (Zagona & Zurcher, 1965; Zurcher, Willis, Ikard, & Dohme, 1967). Finally, in a study indicating the value of subgroup analyses, Korn and Giddan (1964) found dogmatism to be negatively correlated ($r = -.20$) with verbal scores on the Scholastic Aptitude Test, but not with SAT quantitative scores. Moreover, using the verbal SAT scores and a measure of dogmatism designed to remove the effects of response set and analyzing their data separately for males and females (all of whom were freshmen at Stanford), they found a significant negative coefficient ($r = -.18$) for males but a nonsignificant relationship ($r = -.003$) for females. This helps to account for the finding reported by Long and Ziller (1965) with the SCAT. Coupled with the different findings for verbal and quantitative scores when that breakdown was analyzed, the male-female difference in Korn and Giddan's study suggests the extent to which inconsistencies in tests and samples might explain divergent research results with the Dogmatism Scale. In any event, although some studies report significant dogmatism-intelligence relationships in contradistinction to Rokeach's finding, it is clear that the relationship, if any, is negative and small.

Geographic Location, College, and Dogmatism

Variations in dogmatism scores among students from universities located in different parts of the country have not generated the interest that has been the case for the F-Scale. Generally, analyses have not been made of the significance of any differences among such groups, although a table presented by Alter and White (1966) summarizing data from several studies indicates that there are likely to be wide variations in dogmatism means from one subculture to another. Girault (1968) found that teachers from the South tended to have higher D-Scale scores than those from other regions. The other reported analysis (Lehman, 1962a) will be discussed later because his groups definitely reflected religious differences.

Kerlinger and Rokeach (1966) have, for example, reported the means of different college groups used in their factorial analysis of the D-Scale and the F-Scale. The means are remarkably similar for Michigan State University, Louisiana State University, and New York University students (149.48, 148.84, and 145.44 respectively) and no test of significance was reported. A mean reported for University of Utah students (149.4) was similar (White and Atler, 1967). Rabkin (1966) referred to a series of five means on Ohio State University students ranging from 141.3 to 143.8 (reported in Rokeach, 1960). He found the mean for his 107 teachers (132.3) to be significantly lower ($p < .05$) than those of two of the Ohio State groups.

Religion and Dogmatism

Looking at specific identifiers of subcultural differences is likely to be more productive than gross comparisons of subjects from different geographical locations. If Rokeach's formulation of dogmatism is correct, members of fundamentalist religions should have high dogmatism scores (accompanying the high authoritarianism scores reported in the section of the review on the F-Scale and religion). In addition, however, those who are far "to the left of center" in their religious orientations should also have relatively high dogmatism scores.

Rokeach (1960, pp. 109-115) has presented data from two studies which he interprets as supporting these expectations. With a group of Michigan State University students, he found a decreasing order of mean dogmatism scores for Catholics, Protestants, and those professing no religion (means equal to 191.1, 180.1, and 174.6 respectively, with the Catholic-Protestant and the Catholic-nonbeliever comparisons significant at the .01 level). Referring to scores on his Opinionation Scale, Rokeach suggested that all three of these groups were actually "right of center" groups. With a sample of students from New York colleges, categorized as Catholic, Protestant, Jew, or nonbeliever, Rokeach found nonbelievers who fell "to the left of center." Here the Dogmatism Scale means were, respectively, 147.4, 138.3, 131.5, and 147.2. Although none of the differences between means is significant at the .05 level, Rokeach interprets the trend as supporting his expectation that right and left of center religious groups will both have mean dogmatism scores higher than center opinionation groups.

Cline and Richards (1965) conducted a study in Salt Lake City using a modified TAT, along with a depth interview and a Religious Belief-Behavior Questionnaire, to gather data on a random sample of 155 adult male and females. Factor analysis of their data produced a factor which they labeled *Dogmatic Authoritarianism*. According to the researchers, ". . .this factor does not involve any tendency toward conventional or conservative religious beliefs" (p. 574). They concluded that their results were consistent with Rokeach's formulation, because they suggest that ". . .an unbeliever is just as likely to be authoritarian about his unbelief as a believer is to be authoritarian about the dogmas of his faith" (p. 574).

Other studies have supported the general notion that there is a positive relationship between dogmatism scores and the extent to which the subject's declared religion is to the right of center. Quinn (1964), although reporting no means or statistical analysis, reported the following sequence of high to low Dogmatism Scale scores for his groups: parochial school Catholics, public school Catholics, Jews, Protestants. Lehman (1962b) found with a sample of 2,746 entering freshmen at Michigan State University that Catholics were more dogmatic than Jews or Protestants, and that students from parochial schools were more dogmatic than those from public schools. In another study, Lehman (1962a) compared random samples of 50 males and 50 females from a Presbyterian liberal arts college, a Congregational liberal arts college, and a large state university--all in the Midwest. With both males and females, there were significant differences among students from the three colleges with the means in the following descending order: Congregational, Presbyterian, state university. It is interesting to compare the mean dogmatism scores (176.27) of Uhes' (1968) high school students with that (165.75) of Kemp and Kohler's (1965) high school sample. Uhes' Utah sample was largely Mormon, while Kemp and Kohler's midwestern sample was likely heavily Protestant. It is also worth noting that a study with Italian adults (Di Renzo, 1967) indicated a significant relationship between degree of religious practice and dogmatism.

Rabkin (1966) working with extremely small subgroups of teachers (80 Protestant, 6 Catholic, 3 Jewish, and 18 unknown) found no significant differences among his religious groups. Given the small number of Catholics and Jews and the relatively large group of unknowns, it is difficult to give his results much credence.

Only one Dogmatism Scale study could be found which was related to the notion that conservative believers and unbelievers would be equally dogmatic. Feather (1967) compared four groups of students--30 from the fundamentalist

Evangelical Union, the Newman Society, the Student Christian Movement, and 10 atheists. The first group was highest in dogmatism and the last group was the lowest. Feather's findings contradict directly the Rokeach hypothesis because atheists would likely be among the strongest of the "non-believers"--probably, for example, maintaining a more stringent position than those who label themselves "agnostics."

Dogmatism and Teacher Education

There is considerable reason to suspect that dogmatism is a variable which should be of interest to teacher educators. There is little evidence, other than that indirectly available from other personality measures as already cited in the earlier review of studies of authoritarianism, that those who go into teacher education are more dogmatic than college students selecting other fields, even though there is speculation that teachers are more dogmatic than other people (Soderbergh, 1964).

Of some possible relevance is a study by Kemp (1964) in which college seniors were tested and then retested six years later using the Kuder Vocational Preference Record, the Strong Vocational Interest Blank, and the Allport-Vernon Study of Values. Although both high and low dogmatics changed value and vocational interest patterns, high dogmatics tended to change in the direction of occupations offering more security and more opportunity to exercise direction and control, while low dogmatics tended to shift toward more interest in social service occupations. While it could be argued that teaching is a social service occupation, there is also little question but it is an occupation which offers security and the chance to exercise direction and control. Friedenberg (1959) used these characteristics of teaching to argue that those who become teachers tend to be timid and constrained.

If, indeed, teachers do tend to be dogmatic (a claim not yet established), there would be reason to describe them as constrained. Although Leckart and Wagner (1967) found no difference between high and low dogmatics in the time spent looking at novel stimuli, there is considerable evidence that reactions to novel stimuli are related to D-Scale scores. Mikol (1960) found closeminded subjects to be less accepting of new music and a new composer than openminded subjects. Zagona and Kelly (1966) projected what they considered to be a novel film of color designs accompanied by jazz music. Although high dogmatics did not indicate any less preference for complex and asymmetrical designs, as measured by the Graves Design Judgement Test, they were less accepting of the movie. Dogmatism has also been found to be a significant factor in painting preferences (Frumkin, 1960).

Kaplan (1963) concluded that high dogmatics are less open to experiences after finding that they have lower sensory acuity than low dogmatics. He used measures of olfactory, gustatory, tactile, auditory, and visual acuity. His low dogmatics had higher scores on five of the six measures, with a trend in that direction on the sixth. In addition, the correlation between D scores and total sensory scores was -.61. A related corroborating study is that by LoSciuti and Hartley (1963). They concluded that low D scorers tend to see stimuli from religions other than their own more often than do high dogmatics.

The lack of openness to the novel and different is reflected in Kamenske's (1966) finding that high D scorers employed by an insurance company were more resistant to a change to a computerized system. And, Childs (1966) has reported that in a study of eight school districts in Michigan, a significantly greater proportion of teachers and administrators were "open-minded," as measured by the D-Scale, in districts judged to be innovative as compared to districts judged to be non-innovative. If innovation and change are not only present in current education, but vital to increases in educational effectiveness, the findings reviewed above have serious implications for the selection of prospective teachers.

On the other hand, attempts to use the Dogmatism Scale in the educational setting have not always produced such clear cut results. Fish (1962),on the basis of essay test results with 18 students in a science education course for elementary teachers, concluded that low dogmatics are better able to describe developmental sequences after reading scientific generalizations and so would be better able to direct discovery learning. Girault (1968) reported that the dogmatism scores of 414 history teachers correlated (r = .31) with scores on an Objective versus Subjective History Scale. (A high score on the History Scale is supposed to indicate a tendency to see history as a body of concrete, objective, unchanging facts, with the historian a recorder-reporter of these facts.) Ohnmacht (1967b) concluded, on the basis of a factor analysis using the D-Scale, F-Scale, Closure Flexibility Test, Embedded Figures Test, and the Teacher Characteristics Scale (anticipated teaching behavior) administered to a sample of 57 male secondary education majors, that a high dogmatic-low analytic factor appeared to identify subjects who were not likely to be imaginative, stimulating classroom teachers as compared to low dogmatic-high analytic and low dogmatic-low analytic subjects. James Johnson (1966) reported that the D-Scale scores of student teachers at George Peabody were significantly related to their attitudes toward teaching and the teacher-pupil relationship. Significant, but low, correlations were found between dogmatism and ratings of the student teachers by their supervising teachers. But no relationship was found between D scores and ratings by college supervisors or the student teachers' ratings of their own success. Sears (1968) found that his closeminded teachers received more traditional scores on a Philosophy Scale, but didn't differ from his low dogmatics on certification rank (females did have a significantly lower certification rank, suggesting that the males' economic responsibilities may have been an important factor) or in participation in professional groups.

Such findings are interesting, but they suffer from the deficiencies of so much research in teaching--they are one step removed from actual classroom behavior and at least two steps removed from the effects of teacher behavior on students. Studies relating dogmatism to teacher behavior are scarce. Although Hanny (1967) concluded that high dogmatics can be taught to use interaction analysis to control their verbal classroom behavior, Ohnmacht (1967a) found that scores on the Dogmatism Scale were not related to indirect-direct teacher behavior as measured by Flander's Interaction Analysis.

The slight usefulness of the Dogmatism Scale in predicting actual school behavior on the part of teachers and principals is also indicated by research into school climate and ratings of one another by school personnel.

Gordon (1968) found the dogmatism scores of school administrators to be positively related to traditional scores on a Philosophy Scale. When related to the ratings of administrators by school personnel using the Leader Behavior Description Questionnaire (LBDQ), the dogmatism scores of administrators were negatively related to the Consideration dimension of the LBDQ, but showed no significant relationship to the Initiating Structure dimension. The dogmatism of the administrators was also not related significantly to the holding power of their schools, although there was a trend toward a negative correlation. Bentzen (1968) found that the relationships between D-Scale scores, Organizational Climate Description Questionnaire (OCDQ) scores and Teacher Power Scale scores varied tremendously from school to school. (The range of correlation coefficients for D-Scale and OCDQ scores was -.11 to .62). Huesk (1966) carried out a study employing 44 elementary schools, 714 teachers and 44 principals. His data produced little support for his prediction that the complying behavior of dogmatic teachers would result in a positive relationship between teachers' D scores and principals' ratings of the teachers, with differing behavior resulting in a negative relationship between dogmatism and ratings by the teachers' peers. Correlation coefficients for teachers' D scores and principals' ratings ranged from -.71 to .67 from school to school. He did find that for 26 schools from which he had ratings on a "happy-troubled" scale, there were negative relations between the principals' ratings and teachers' D scores for happy schools, and positive relationships for troubled schools.

Croft (1965) found no relationship between principals' dogmatism and their ability to judge how they were perceived by their teachers or superintendent. Bentzen (1966) investigated the relationship of teachers' D scores to ratings of their congeniality as a co-worker by princiapls and fellow teachers. No significant relationship emerged. The range of correlation coefficients for teachers' dogmatism scores and principals' ratings was -.706 to .671. In a study looking to the effects of principals' dogmatism on ratings, Musella (1967) found that high dogmatic principals tended to pick high dogmatic teachers as effective (Bentzen, 1966, found that dogmatic principals tended to give dogmatic teachers lower congeniality ratings), while low dogmatic principals tended to select both low and high dogmatic teachers as effective.

Generally, the findings are equivocal. They indicate that researchers must be careful about interpreting correlations between principals' or teachers' dogmatism scores and their ratings of or by others, as well as correlations between the dogmatism of school personnel and the organizational climate of schools, when these correlations are based on only one school or district.

Dogmatism and Attitudes Toward Children

Is the teacher's score on the D-Scale likely to reveal anything about his attitudes toward children and the disciplining of children? One area of research that might help in answering such a question is that investigating the relations between dogmatism and counseling skills, for it is generally assumed that an ability to empathize with and understand others is a basic prerequisite to successful counseling. No clear relationship between counseling ability and D scores has emerged, although as one so often finds in a review of research in authoritarianism and dogmatism, the plethora of criterion measures and of samples used makes any interpretation difficult.

Saltzman (1967) found a negative relationship between dogmatism and regard for others (as measured by the Barrett-Lennard Relationship Inventory) for 30 participants in a counseling institute. He also found that medium D scorers improved more from the use of programmed materials dealing with counselor attitudes, and concluded that the relationship between dogmatism and the learning of human relations skills did not seem to be linear. Kemp (1962) used Porter's Test of Counselor Attitudes and behavior in actual counseling situations to compare students who participated in a counseling practicum with a control group who did not. He found no significant changes in the control group. Low dogmatics tended to change toward greater permissiveness and understanding, while high dogmatics changed, from the test to the counseling situation, toward less understanding. Kemp concluded that apparently the high D scorers gave permissive responses on the Porter test to agree with the instructor, but this did not indicate an effect on counseling behavior.

On the other hand, Rosen (1967) reported that for the 28 participants in a counseling institute, the Dogmatism Scale was not among the best four predictors (chosen from the Dogmatism Scale, Allport-Vernon Study of Values, the Strong Vocational Interest Blank for Men--Social Science, the Edwards Personal Preference Scale, the National Education Act Comprehensive Examination in Guidance and Counseling, years of teaching experience, years of counseling experience, and age of counselor) of any of the criterion variables (rating scales--Accurate Empathy Scale, Self-Congruence Scale, Unconditional Regard Scale, all combined to a Total Competency Scale; and the same scales scored from tape recordings of counseling interviews). Milliken and Paterson (1967) generally found no statistically significant differences on the D-Scale between good and poor counselors, except when the groups were defined on the basis of supervisors' composite rating scores.

There have been more direct attempts to measure attitudes toward children. When college students were asked to take the D-Scale twice--once for themselves and secondly as they thought a "typical" college student would--the correlation between the two sets of scores was .43 with the estimated D scores higher on the average (Burke, 1966). Low dogmatics were both more accurate in their estimations and more variable. Burke took this as an indication that dogmatism is negatively related to sensitivity toward others. His findings seem to indicate at least a negative relationship with empathetic ability of one sort. On the other hand, Brumbaugh, Holdt, and Beisel (1966) found no relationship between the D scores of student or supervising teachers and their ability to predict the others' personality needs as measured by Schulty's FIRO.

Vacchiano, Schiffman and Crowell (1966) found that with a group of 27 male and 28 female graduate students who lacked prior teaching experience or teacher training, the correlation between the Minnesota Teacher Attitude Inventory (MTAI) and D-Scale scores was -.40. A nonsignificant correlation between D scores and gains on the MTAI during a 6 week intensive teacher training course ($r = -.19$) indicated that dogmatism was not related to changes in attitudes toward teacher-student relationships in the classroom. The finding of Vacchiano and his associates with the MTAI scores is supported by Hoy's (1966) report that for 805 teachers and 168 principals in Pennsylvania, those who were more closeminded tended to be more custodial in their pupil control ideology.

A study by Rebhun (1967) is also relevant. He found significant relationships between the dogmatism scores of male undergraduates and the following attitudes as measured by the Schaefer-Bells Parental Attitude Research Scale: fostering dependency, seclusiveness, breaking the will, harsh punishment, demanding activity, deification of parent, ascendancy of husband, suppression of affection. He concluded that dogmatic individuals tend to hold parental attitudes which discourage children from intruding upon the parents' belief-disbelief systems. If his findings and conclusions are applicable to females and to those males going into teaching, the implications for the teacher's relations with his pupils could be serious.

One other study (McCarthy & Johnson, 1962), although tangential, is relevant here. It involved the reactions of 157 undergraduates toward the demonstrations against the House Un-American Activities Committee's hearings in San Francisco in 1960. Authorities claimed that the demonstrations were communist inspired; the students involved said not. The subjects, none of whom were involved in the demonstrations, were asked which account they accepted. High dogmatics tended to accept the official version; low dogmatics tended to accept the student account; those neutral in opinion tended to fall in the middle of the D-Scale range. Perhaps it is not stretching one's imagination too far to suggest that dogmatism might be a factor in the teacher's willingness to accept his students' versions of their apparently deviant behavior.

In any event, despite the implications which studies such as the above have for teacher attitudes, one can only conclude that it is unfortunate that there have not been more studies dealing directly with classroom behavior. It must be recalled that Ohnmacht (1967a) found no relationship between teachers' dogmatism scores and their indirect-direct behavior as measured by Flander's Interaction Analysis.

Dogmatism and Thinking

If scores on the Dogmatism Scale do indicate the degree of openness of one's belief-disbelief systems, this variable might well be of concern to educators who believe that one of the functions of public education is to prepare students for more effective thinking. Can teachers who are basically closeminded in their construing of the world educate students to be otherwise? Although one might be inclined to give a negative response to the question, there is unfortunately no research evidence bearing directly on it. However, with the assumption that the teacher's thinking competencies would bear some relationship to his instructional effectiveness, perhaps due to the model of thought he would provide his students, some research findings become relevant.

The relevant research findings do not, however, provide a firm basis for concluding that the dogmatism of teachers, as measured by the D-Scale, is a crucial variable in education. It will be recalled that the correlations between F-Scale scores and intelligence test scores have been consistently significant and negative, even though low. However, findings with the D-Scale have been equivocal, this despite a finding (Rebhun, 1966) of a positive association (coefficients of about .25) between D scores and anxiety (as measured by Sarason's Test Anxiety Scale), leading Rebhun to conclude that dogmatism might impair intellectual functioning. Therefore, if intelligence test scores are taken to be measures of thinking ability or potential, research with intelligence tests gives little assurance that the D-Scale is an effective predictor of teachers' thinking ability.

Other evidence in regard to dogmatism and thinking is available. Kemp, in two different studies (1960, 1963), has found high and low dogmatic college students to differ significantly in their scores on selected problems in critical thinking and on the Watson-Glaser Critical Thinking Appraisal. Klein (1966) reported that D scores were negatively related to deductive reasoning scores (apparently based on the Watson-Glaser test).

Using a somewhat less direct measure of "critical thinking," an investigation by Kleck and Wheaton (1967) indicated that although high dogmatic high school students did not show significantly greater preference for information consistent with their opinions, they did recall significantly less inconsistent information and they evaluated consistent information more favorably than did low dogmatics. Miller and Lobe (1967) concluded that opinionated language was effective in changing attitudes across the range of dogmatism, although there was some support for the hypothesis that opinionated language attributed to a highly credible source would bring about greater attitude change with high dogmatics than with low dogmatics. Along the same lines, Long and Ziller (1965) concluded, on the basis of their research, that low dogmatics tend more than high dogmatics to delay decision-making and to reserve judgement and search for and utilize additional information. Certainly, in the light of the current press in social studies education to teach methods of inquiry rather than just "facts," the finding of Girault (1968) referred to earlier (that dogmatism is correlated with a view of history as concrete and objective, with the historian a recorder-reporter of facts) is relevant to a concern with teachers' abilities to teach for critical thinking.

All of the evidence is not consistent, however. Rokeach (1960) has theorized that the dogmatic person would have difficulty with tasks involving the synthesis of beliefs. His ingenious research with the Doodlebug problems and the Kohs Block Design Test confirmed this expectation (Rokeach, 1960). However, Kessler and Kronenberger (1967) with a sample of Xavier University students, found no significant difference between high and low dogmatics on synthesizing ability, as measured by performance on the Kohs test. Bruce Johnson (1966) found that when subjects were told they were taking an I.Q. test to screen out "below average" people (to induce a stress condition), there was a curvilinear relationship between dogmatism and scores on perceptual-cognitive synthesizing tasks. This relationship--with medium dogmatics doing better than low or high dogmatics--help up with I.Q. and anxiety partialled out. Johnson concluded that his results imply that extreme openmindedness may be as disruptive as extreme closemindedness.

Cognitive measures of creativity have shown small negative relationships with dogmatism. Jacoby (1967) reported that with a sample of 24 graduate students in business education, the correlation between dogmatism scores and scores on the Remote Associations Test was -.248 (p = .12). Zagona and Zurcher (1965) found significant differences between high and low dogmatics in their ability to form remote verbal associations. Uhes (1968), using a sample of over 200 high school seniors, found low but significantly negative relationships between D scores and several measures of divergent and convergent thinking.

The relationships between D scores and thinking ability, measured in terms of critical or creative thinking, seem to be negative and low. Kemp (1962a) has suggested that the relationship between dogmatism and synthesizing ability holds true with unfamiliar tasks. Familiar tasks and those in which an authority gives hints as to the "proper" synthesis apparently do not present the closeminded person with relatively greater difficulty as compared to low dogmatics. These qualifications, plus research results (Johnson, 1966; Kessler & Konenberber, 1967), raise serious questions about the relationship between dogmatism and synthesizing ability as hypothesized by Rokeach. The varying research results indicate that the conditions under which the relationship is assessed are likely to be of critical importance.

Dogmatism and The Methods Course

As in the review of studies using the F-Scale, two aspects of dogmatism and students' reactions to the methods course are of interest here: (1) the relationships between the students' dogmatism and their ratings of the instructor, and (2) the relationship of dogmatism and learning. There was not a great deal of research available that was related to the first category, in contrast to the review of authoritarianism research. The review to this point indicates that dogmatics may find synthesis more difficult, especially under stress. Girault (1968) reported a relatively high (r = .45) correlation between D scores and scores on the Walks Ambiguity Scale (intolerance of ambiguity). These factors would indicate that high dogmatic students would react negatively to a change to a methods course that (1) required an analysis of social studies goals, along with a synthesis into curricular proposals on the part of the students, and (2) was more ambiguous in that examinations involved the discussion of curricular issues in essay questions, rather than the testing of specific content through objective-type questions. Yet, the studies reviewed earlier, indicating conflicting findings when the ratings of school personnel were related to dogmatism, make it difficult to conclude from the literature that any particular relationship would likely be found between dogmatism and the students' ratings of the instructor.

Dogmatism and Learning. One of the concerns of the present study is the relationship between D scores and indices of learning in the methods course. In an earlier review, Jackson and Shattner (1964) indicated that dogmatism generally correlates negatively with learning. Ohnmacht (1966) has found dogmatism to be a factor in concept formation tasks involving a reversal of the initial task. Adams and Vidulich (1962) used volunteers from an introductory psychology course in an experiment in paired-associate learning. Their high dogmatics made significantly more errors with both belief confruent and belief incongruent pairs of noun stimuli and adjective responses. Moore (1962) found, in a study of the conditioning of the verbal behavior of 369 university students, that low dogmatics conditioned significantly better. Kemp (1963) carried out a study somewhat more in line with the traditional conception of learning. He found that when 80 university freshmen were given special training in problem solving and tested for gains on the Watson-Glaser Critical Thinking Appraisal, the improvement of high D scorers was not significant, while the low D scorers showed improvement significant at the .01 level.

Frumkin (1961) found that high dogmatics obtained significantly lower ($p < .ol$) grades in a sociology course. Ehrlich (1961), in a study that provoked a series of further research studies, found dogmatism to be significantly and inversely related to learning in an introductory sociology course, as measured by scores on a true-false test. This relationship (significant at the .01 level) held up with Ohio State Psychological Examination scores partialled out. (The relationship between learning and OSPE scores was not significant with D scores partialled out.) Christensen (1963) "replicated" Ehrlich's study at another university, but using students in an introductory psychology course. He did not find the inverse relationship which Ehrlich reported (using multiple-choice and essay questions as measures of learning). He suggested that his differing results might be due to a more rigorous approach in psychology which might be more congruent with the needs of the dogmatic person. Costin (1965) attempted to duplicate Ehrlich's method while using Christensen's subject matter to determine if method was a factor in the different findings. He found a slight ($r = -.19$), but insignificant relationship between dogmatism and learning scores, and proposed that dogmatism-learning relationships are confounded by different types of dogmatism and the type of material being learned. In order to determine if test format was a factor in the contradictory Ehrlich-Christensen findings, White and Atler (1967) used both true-false and multiple-choice items with 2099 introductory psychology students at the University of Utah. They found that with 14 classes involved there were 12 negative and 2 positive correlations between D scores and learning scores, with an overall correlation of -.18 ($p < .01$). They found no difference between the results obtained with the true-false and with the multiple-choice items. A study conducted at the University of Arizona with 517 introductory psychology students (Zagona & Zurcher, 1965) also produced a low ($r = -.20$), but significant ($p < .001$) negative correlation between D and learning scores. In addition, the investigators noted "striking" differences in class performance between high and low dogmatics, with the former being characterized as intellectually lethargic and unwilling to relate to others.

As with the research dealing with dogmatism and thinking (synthesizing ability), low negative and nonsignificant relationships between dogmatism and learning are in evidence. And, similarly, the indications are that whether or not relationships will be found between learning and dogmatism will depend to a large extent upon the conditions under which the relationship is assessed.

Cross-Cultural Studies

Little has been done using the Dogmatism Scale in cross-cultural studies, although Rokeach (1960, pp. 409-410) has suggested that the structure-orientation, as compared to content-orientation, of the D-Scale increases the feasibility of such studies. Rokeach's (1960) data with English students are of little value because of the limited numbers in his samples. He made no tests of significance for cross-cultural differences. Peabody (1961) did not find a significant difference between English and American engineering students. Other studies are simply lacking. Certainly, any that are carried out must pay attention to the possible constraints, mentioned in the review of the F-Scale research, on the use of tests developed in one culture to assess personality in another.

Summary

A call to summarize the vast array of research with the F- and D-Scales staggers the mind. In fact, the great number and variety of research studies using the two scales is one of the striking realizations coming from a review of the literature. The other striking, if unfortunate, realization is the plethora of samples (usually selected on the basis of expediency) and variables used in the authoritarianism and dogmatism research. It is difficult not to conclude that the great number of equivocal findings may be due largely to uncontrolled sampling fluctuations and a lack of consistency in measures from study to study. One of the few attempts to methodically follow up previous research has been in the area of dogmatism and learning. But even here, inconsistencies in subject matter, samples, and tests have clouded the findings.

Despite the generally disorderly nature of the research, it seems worthwhile to summarize briefly some findings particularly relevant to the present project. To begin with, although both authoritarianism and dogmatism appear to be potentially potent variables in the study of education, there is little research bearing directly on the question whether education as a profession does attract people who are high authoritarians or more close-minded than those in other fields. By the same token, while both scales have been found to be related to expressions of attitudes toward children and teaching, there has been little success in attempts to relate F or D scores to classroom behavior. The findings that high authoritarians are less able to empathize with others, less child-centered, and more inclined to be punitive, and that high dogmatism scorers are likely to be less open to new stimuli and to change are suggestive. But such findings are likely to be of little import to teacher selection or education unless they can be confirmed in the classroom.

One part of the present study has been a concern with the reactions of college students to a changed social studies methods course. One indication of their reactions was their ratings of the instructor of the course. There is little basis in the literature for predicting how those evaluations might be related to dogmatism or authoritarianism. High F scorers might, on the one hand, be expected to react negatively to an instructor who was a socratic, rather than a lecturer, authority figure. On the other hand, it also seems clear that high authoritarians tend to be less critical in their judgements of authority figures. There is little related evidence from the research with the Dogmatism Scale. However, high dogmatics might be expected to react negatively to the ambiguity and the demands for synthesis in the course, resulting in a negative evaluation of the instructor. But this prediction is based on so little research that it cannot be made with any confidence.

Measures of learning present another possible criterion of "reaction" to the methods course. The review of research with the F-Scale indicated that it would be reasonable to expect a small, but negative relationship between F scores and learning variables. The finding that dogmatism scores are negatively related to increments in critical thinking after instruction are counterbalanced by the confused findings in introductory sociology and psychology courses. Any relationship between dogmatism and learning in the present study would be expected to be negative and low.

The second part of the present study has been concerned with the possibility that different samples of teachers might produce different results in the type of research which constitutes the first part of this project. The review, as already mentioned a number of times, has indicated the great variability in findings that can occur from one sample or subsample to another in studies using the F- and D-Scales. One reason that the question of sample variation arose in the present study was that the project was to be carried out on a group of students who were predominantly Mormon. The review has indicated that the level of dogmatism or authoritarianism is likely to vary with samples of differing religious inclinations. This effect will be explored further in the presentation and discussion of data in Chapter V.

The relationships of several other variables to F- and D-Scale scores will also be explored to answer further the question whether fluctuations in the authoritarianism and dogmatism of samples is important in research involving college students preparing to be teachers. The review of literature indicates that generally one should expect to find a low, but negative relationship between F-Scale scores and intelligence. With the Dogmatism Scale, the relationship should be anticipated as low and negative, if significant at all. While it does seem fairly clear that both authoritarianism and dogmatism decrease with increases in level of education, the relationship between age and the scores on the two samples is not clear cut. By the same token, there are conflicting findings when the scores of males and females have been compared. The research also provides no basis for expecting that elementary and secondary teachers will differ in their F- and D-Scale scores. However, there is a paucity of research findings bearing on the relationship between the subject fields in which prospective teachers will teach and their authoritarianism and dogmatism. Data from the present study should shed light on the relationships between each of these variables and F- and D-Scale scores.

Finally, there is clear evidence that the F-Scale does pick up differences between cultures. This has been true in comparing Americans with Arabs, Japanese, and Germans. Few intercultural studies are available with the Dogmatism Scale. That part of the present study involving the sample of German teacher trainees will serve to extend the intercultural evidence on both scales. The analysis should, based on past findings, indicate higher mean F- and D-Scale scores for the German sample as compared to the American one.

As a postscript, it might be well to mention the consistently high relationships between the F- and D-Scales which have been reported in the literature despite the number of factor analyses that seem to indicate that dogmatism and authoritarianism are discriminable. The present study has produced intercorrelations between the two scales, as well as between each and the Gough-Sanford Rigidity Scale which played a central role in Rokeach's empirical distinction of dogmatism and rigidity. These findings will be reported for those interested in the question of the validity of the scales.

IV: OPEN-CLOSED MINDEDNESS AND THE METHODS COURSE--THE STUDY

As has already been noted in the first chapter, the research to be reported here is an outgrowth of curiosity about the factors related to students' reactions to a social studies methods course. The studies were exploratory and correlational in nature, in an attempt to gain some insights into the tendency for students to make rather strong verbal reactions to the methods classes taught by the senior investigator.

In looking back through the students' evaluations for these courses, it has been heartening to be reminded that, almost without exception, when asked to indicate whether there is something you believe the instructor has done especially well in his teaching of the course, the students responded with some variation on the theme, "He has stimulated me to think more critically about educational issues." Yet, there is still the nagging memory (having moved on into the area of research, undergraduate methods courses are no longer a part of the senior investigator's teaching assignment) that many students were not happy with the course. The reasons are no doubt partly indicated by common responses to a query on the evaluation forms for "specific things you believe might be done to improve the instructor's teaching of this course." More specificity in assignments, lectures, and tests were often called for. The lack of specificity was a part of the attempt to set the stage for the emphasis on thinking and analysis which evoked positive comments.

In this context, measures of dogmatism and authoritarianism seemed to have particular potential for an exploratory study. The variable of cognitive rigidity also held promise, although from the first, it was included in the study primarily to provide a check on Rokeach's distinction between dogmatism and rigidity.

The Subjects and the Setting

Three sections of the social studies methods course were involved in the research. Group 1 (N = 26) took the course during the Spring Quarter, 1963; Group 2 (N = 33) took the course Fall Quarter, 1963; Group 3 (N = 30) took the course Spring Quarter, 1964. To the consternation of those instructors who like classes adorned by feminine pulchritude, few female students major in secondary school social studies at Utah State University. In this investigation, Group 1 had only two females; Group 2 had four; and, Group 3 had 9. Generally, the students were juniors who had not yet done their student teaching, although an occasional senior was enrolled.

The course was a three-hour class, meeting three times a week for a fifty-minute period. There was no assigned textbook, although journal articles and sections from books were assigned for reading. (A book by Shaver and Berlak, 1968, presents readings quite representative of those used in the course.) Class meetings were typically devoted to the discussion of issues in social studies education. Although the assigned readings were relevant to the discussions, only infrequently did a discussion focus on the analysis of a specific reading. Lectures were presented by the instructor at no more than one out of four or five class meetings.

No systematic data describing the class meetings were collected, although it was recognized that such information could be valuable in interpreting the findings (Shaver, 1964). The exploratory nature of the study and the limited resources simply did not make the development of an instrument for scoring classroom behavior or the hiring and the training of observers feasible. If a description of teaching style presently in the literature could be applied to the class discussions, however, it would undoubtedly be that of a socratic teacher, as compared to a recitation one (Oliver & Shaver, 1966; Shaver, 1964). Students were prodded to take stands on issues in social studies education and then forced to defend their stands, with special attention paid to possible inconsistencies in their beliefs and values.

The Data

The F-, D-, and R-Scales were combined in one testing instrument for this study. Form 40-45 of the F-Scale (Adorno, 1950, pp. 255-257) was used with one modification. Item No. 22, "It is best to use some prewar authorities in Germany to keep order and prevent chaos," seemed historically out of context for our college samples. Moreover, of all the items, it seemed most likely to be reacted to in a different context by the subjects in our German samples. Consequently, that item was dropped from the scale. A replacement was not constructed. This means that the F-Scale means reported in this study are based on a 28 rather than a 29-item scale. This should be remembered in comparing our data against those from other studies. Such comparisons should be made on the basis of group means converted to mean scores per item. While dropping the one item has disadvantages, those of constructing a replacement with attendant questions of validity seemed more serious.

The testing instrument, which included the 28-item F-Scale, the D-Scale (Form E) and the R-Scale (as presented in Rokeach, 1960, pp. 418-419), was administered during regular class periods toward the beginning of each quarter. Administration took about 25 minutes. The reliability coefficients for the tests (split-half, corrected with the Spearman-Brown Formula) for the three groups combined were: F-Scale, .74; D-Scale, .82; R-Scale, .81.

In groups 2 and 3, the Otis Quick-Scoring Mental Ability Tests: New Edition, Gamma Test was administered as an estimate of mental ability that would consume little class time.

During one of the last two class meetings, the University of Washington Survey of Student Opinion of Teaching was administered to obtain student evaluations of the instructor. The first part of the Survey has ten items (see Table 2) on which each student rates the instructor. The instructor is to be compared with other teachers the student has had, using the following scale: 1 = outstanding, 2 = superior, 3 = competent, 4 = fair, 5 = of less value. The numerical order of the scale was reversed in scoring the evaluations so that correlation coefficients would be easier to interpret. Each item was included in the analysis along with a total score which was the sum of the items.

The second part of the Survey contains ten more items. The first group of ten items on the Survey is the outgrowth of factor analyses carried out at the University of Washington (Guthrie, 1954). These are now kept constant

TABLE 2

Items from the University of Washington Survey of Student Opinion of Teaching Used in the Study

1. Interprets abstract ideas and theories clearly
2. Gets me interested in his subject
3. Has increased my skills in thinking
4. Has helped broaden my interests
5. Stresses important material
6. Makes good use of examples and illustrations
7. Has motivated me to do my best work
8. Inspires class confidence in his knowledge of subject
9. Has given me new viewpoints or appreciations
10. Is clear and understandable in his explanations

C. Is willing to give individual attention
F. Has a good sense of humor
G. Is fair in grading
H. Has presented many thought-provoking ideas
I. Has given me new tools for attacking problems
J. Shows respect for questions and opinions of students

for the University's own use of the Survey in its instructor evaluation program. The items in the second group, however, are varied occasionally in the hopes of turning up better discriminators. From the second group of items, six of interest were selected for inclusion in the analysis. These items are also presented in Table 2. Again, the individual items were summed for a total score.

Other items taken from the Survey for analysis were an estimate by the student of the grade he would receive in the course (coded A = 4, B = 3, C = 2, D = 1, E = 0), a grade for the instructor (A, B, C, D, or E) to be based on his "help" to the student in his "efforts to learn this subject," and a three point rating of the subject matter of the course (highly interesting, moderately interesting, not very interesting).

For each of the three groups, the students' grades in the course were used as a criterion of learning. In addition, for Group 2 there were available two other measures of learning: a gain score on a 3-item multiple choice test, and a gain score on the Social Issues Analysis Test No. 1 (Oliver & Shaver, 1966) aimed at determining the student's ability to analyze the analytic functions indicated by statements in a discussion. In retrospect after the completion of the course with Group 2, neither test seemed to reflect adequately the objectives of the course, so they were not administered to Group 3. The project was not planned, nor was funding provided, for further test development.

Results

The findings of primary interest are those having to do with the relationships of F-, D-, and R-Scale scores to the variables reflecting students' reactions to the methods course. However, some descriptive data on the three groups involved in the study will provide background for the correlational results. The means and standard deviations for the three groups on the F-Scale, D-Scale, R-Scale, and the Otis Test are presented in Table 3.

TABLE 3

Means and Standard Deviations on the F-, D-, and R-Scales and the Otis Test

	F-Scale[a]		D-Scale		R-Scale		Otis	
	Mean[b]	S.D.	Mean[c]	S.D.	Mean[c]	S.D.	Mean[d]	S.D.
Group 1	88.58	17.08	149.74	23.55	85.21	14.76		
Group 2	100.03	17.74	145.70	22.89	92.16	13.65	114.45	8.82
Group 3	88.00	20.13	143.56	21.07	87.68	13.09	119.32	7.86

[a] Twenty-eight item Scale (see text).

[b] With d.f. = 2/74 and F = 3.87, the difference among the means is significant, $P < .05 > .01$.

[c] Difference among the means not significant at the .05 level.

[d] With d.f. = 1/56 and F = 4.75, the difference between the means is significant, $P < .05 > .01$.

The variability in the central tendency of scores from class to class is of particular interest.

Correlations among the F-, D-, and R-Scales are presented in Table 4. Generally there are no surprises here. The correlations between the F- and D-Scales fall with the range reported by Rokeach (1960, p. 121) for his studies. Rokeach (1960, p. 193) noted that in his various studies, the correlations between the D- and R-Scales had ranged from .37 to .55. The correlations between those two variables in this study exceed that range, with one of only .27 and the highest one .76. This suggests that whether dogmatic and rigid thinking are independent as proposed by Rokeach is quite likely dependent upon the particular sample tested. The moderate correlations between F-Scale and R-Scale scores suggest a greater degree of independence than was the case with the D- and R-Scales.

TABLE 4

Correlations Among the F-, D-, and R-Scales

	Group 1	Group 2	Group 3
1. F-Scale			
2. D-Scale	.70* .61 .73		
3. R-Scale	.49 .46 .58	.27 .62 .76	

*Coefficients listed in descending order--Group 1 first, Group 2, second, Group 3 third.

The correlations between the three personality scales and the Otis Test scores are of interest given the concern in the literature for authoritarianism-intelligence and dogmatism-intelligence relationships. Inspection of Table 5 indicates no finding supportive of any hypothesized relationship between intelligence and either authoritarianism or dogmatism. With the small samples involved in this study, none of the correlation coefficients is significantly larger than zero. It is worth noting, however, that in every case the sign is negative. This supports the conclusion in the review of literature that if any relationships exist, they are low and negative.

TABLE 5

Correlations Between Otis I.Q. Scores
and F-, D-, and R-Scales

	F-Scale	D-Scale	R-Scale
Group 2	-.17	-.19	-.12
Group 3	-.23	-.01	-.04

Means and standard deviations for the students' evaluations of the instructor on the University of Washington Survey of Student Opinion of Teaching are contained in Table 6. It will be recalled that the individual items used a five point rating scale, scored so that the highest rating received a value of five and the lowest a value of one. The rating of interest in the subject matter of the course was on a three point scale.

Generally, the mean ratings are at or above the median scale value. Means and standard deviations do not provide information for testing the instructor's impression that students tended to have rather strong positive or negative reactions to the courses. If his perception was correct, the distributions of scores on the Survey could be expected to be bimodal. Inspection of Table 7 does not reveal bimodal distributions for the two total scores obtained by summing ratings for the two groups of Survey items. Yet, the distributions do tend to be platykurtic, with extreme scores extending the distributions. While the presence of strikingly bimodal distributions would have been much firmer confirmation of the instructor's impressions, the shapes of the distributions do lend support for his conjecture that reaction to the courses was diverse.

It is interesting to note that there is a rough correspondence between fluctuations in the means for the rating scale totals and the grade assigned the instructor and the decrease in D-Scale means (Table 3) from Group 1 to 3. This rough association must be interpreted carefully, of course. A similarly negative association between mean course grades (Table 8) and dogmatism means is noticeable, and there is no way of telling whether any trend toward higher ratings of the instructor is due to a decrease in dogmatism or to a possibly more favorable classroom climate when a group of students is going to receive higher grades.

Intercorrelations among the various scores from the University of Washington Student Opinion Survey are presented in Table 9. Item intercorrelations for both parts of the Survey are generally moderate and positive, and frequently significant. This indicates that there is considerable independence among the items.

The relatively high correlations of individual items with the total score for the first part of the Survey are encouraging; the item-total correlations are not so consistently high for the second part of the survey, raising some question about the validity of that total score. The low correlations between the total scores for the two parts are surprising (.39, .42, and .19), but they do justify not pooling the total scores as one variable. A reflection of the low relationship between the two total scores is the relatively high correlations of the first part total with the grade given the instructor, as contrasted with the low correlations for the total of the second group of items.

Some indication of the validity of student responses can be had by looking at the items which correlate with the students' indication of interest in the subject matter. Item 4, "Gets me interested in his subject," was significantly correlated with the subject matter interest score in every class. Other items producing at least two significant correlations had to do with the instructor's success in broadening interests and developing new viewpoints and appreciations. The correlation of the total

TABLE 6

Means and Standard Deviations for the University of Washington Survey Scores

	Group 1		Group 2		Group 3	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Item-1 (Interprets ideas)	3.42	.84	3.60	.86	3.88	1.01
Item-2 (Gets me interested)	3.16	1.01	2.91	1.07	3.60	.86
Item-3 (Skills in thinking)	3.68	.82	3.64	.99	3.84	.75
Item-4 (Broaden interests)	3.17	.71	3.24	1.12	3.48	1.19
Item-5 (Important material)	3.42	.61	2.88	.78	3.52	.96
Item-6 (Examples and illustrations)	3.63	1.01	3.15	1.00	3.88	.93
Item-7 (Motivated me)	2.68	.58	2.61	1.02	2.92	1.04
Item-8 (Confidence in knowledge)	3.32	.94	3.54	1.06	3.75	.94
Item-9 (New viewpoints)	3.68	.88	3.82	.95	3.92	.90
Item-10 (Clear explanations)	3.21	.79	3.00	.97	3.42	.97
Total	33.05	4.58	32.39	6.65	36.44	7.19
Item-C (Individual attention)	3.58	.96	3.58	1.00	3.96	1.17
Item-F (Sense of humor)	3.68	.67	3.48	1.00	4.04	.84
Item-G (Fair in grading)	2.68	.94	2.87	.76	2.96	1.16
Item-H (Thought-provoking)	3.63	.90	3.52	1.15	4.08	1.00
Item-I (New tools)	3.32	.82	3.42	.97	4.00	.95
Item-J (Respect for students)	3.32	1.00	3.54	1.03	3.88	.83
Total[a]	20.21	3.01	20.24	4.45	25.21	10.66
Instruc. Grade	3.94	.72	3.91	.73	4.04	1.12
Subject Matter	2.16	.60	2.16	.73	2.43	.66
Expected Grade	3.50	.51	3.63	.67	3.57	.60

[a] with d.f. = 2/73 and F = 4.35, the difference among the means is significant, $P < .05 > .01$.

TABLE 7

Distribution of Ratings of Instructor on University of Washington Survey--Totals for Two Groups of Items

Total Rating	Survey Total 1			Groups Combined	Survey Total 2			Groups Combined
	G-1*	G-2	G-3		G-1	G-2	G-3	
55			1	1				
54								
53								
52								
51								
50								
49								
48								
47			1	1				
46								
45		1	1	2				
44			1	1				
43	1			1				
42		2		2				
41			3	3				
40		2		2				
39	1	3	2	6				
38	2	2	2	6				
37			1	1				
36	2	2	2	6				
35	1	1		2				
34	1	1	2	4				
33	2	2	1	5				
32	2	2	2	6				
31	3		3	6			1	1
30	1	2		3		1	2	3
29		3		3			3	3
28	1	1		2				
27	2	2		4			1	1
26	1	2	1	4	1	2	3	6
25		1		1	2	5	3	10
24		1		1	2	1	2	5
23					2	7	2	11
22		1		1	1	2	1	4
21					5	2	1	8
20					1	1		2
19					1	4	1	6
18					1	1		2
17		1		1	1			1
16					2	2	1	5
15								
14							2	2
13						2		2
12								

* G-1 stands for Group 1, G-2 for Group 2, etc.

TABLE 8

Means and Standard Deviations for Course Grades,
Multiple Choice Gain Scores, and
SIAT No. 1 Gain Scores

	Group 1		Group 2		Group 3	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Course Grades	3.11	.57	3.15	.87	3.40	.86
Multiple Choice Gain			5.00	1.98		
SIAT #1 Gain			5.75	2.46		

score for the first part of the Survey with interest in subject matter also tends to corroborate the validity of that score as compared to the total score for the second part. Of course, the second part of the Survey contains fewer items and their content is different from those in the first part. Most plausibly, the differing results with the two "total" scores reflect the use of factor analysis as the basis for selecting the first set of items. It will be recalled that these come from a factor analytic study at the University of Washington, while the items in the second set are more experimental in nature.

What of the relationships between F, D, and R scores and student reactions to the course? Table 10 presents the correlations between F, D, R, and Otis scores and the items on the Student Survey. There are few correlations of even a moderate magnitude, and few of these are significant. The total score for the first ten items (which appears to be the more reliable and valid of the two total scores) is not correlated at the .05 level of significance with any of the four tests. In fact, not only do the correlations fail to depart significantly from zero, but their numerical values are extremely close to zero.

There are three significant correlations for the F-Scale. Two of these--for Groups 1 and 3--are with Item C, "Is willing to give individual attention." These few correlations hardly give credence to the notion that there is some consistent relationship between the students' authoritarianism and how they will evaluate an instructor, for one coefficient is significant and negative, and the other is significant and positive. The significant negative correlation between the total score for the second part of the Survey and the F-Scale reflects the correlation with Item C and the generally negative, even though small, correlations between the F-Scale and the individual items. This consistency is in contrast with the correlations between F scores and items on the first part of the Survey for the same group.

Dogmatism scores correlated significantly with only one item--Item 3, "Has increased my skills in thinking." Chance is as good an explanation as any for this one correlation.

TABLE 9

Correlations Among Scores on the University of Washington Survey

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Item 1 (Interprets Ideas)																				
2. Item 2 (Gets Me Interested)	.50^{*a} .37^{a} .57^{b}																			
3. Item 3 (Skills in Thinking)	.20 .48^{b} .47^{a}	.40 .70^{b} .54^{b}																		
4. Item 4 (Broadened Interests)	.18 .59^{b} .50^{a}	.36 .70^{b} .52^{b}	.59^{b} .81^{b} .65^{b}																	
5. Item 5 (Important Material)	.29 .44^{b} .49^{a}	-.11 .36^{a} .46^{a}	-.16 .38^{a} .29	-.43 .54^{b} .21																
6. Item 6 (Examples and Illustrations)	.32 .47^{b} .60^{b}	.38 .13 .20	.12 .12 .21	.28 .24 .43^{a}	.26 .42^{a} .26															
7. Item 7 (Motivated Me)	.52^{a} .42^{a} .78^{b}	.56^{a} .51^{b} .38	.24 .37^{a} .68^{b}	.14 .55^{b} .50^{a}	.08 .33 .50^{a}	.55^{a} .12 .55^{b}														

TABLE 9

(Cont.)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
8.	Item 8 (Confidence in Knowledge)	$.52^a$ .17 .33	.23 .32 .18	-.08 $.37^a$ -.12	-.16 .25 .05	.43 -.14 $.48^a$	.48 .24 .32	.29 .17 .25													
9.	Item 9 (New Viewpoints)	.04 $.44^a$ $.53^b$	$.55^a$ $.60^b$ .38	.31 $.79^b$ $.41^a$	$.54^a$ $.72^b$ $.65^b$	-.46 $.35^a$ .24	.17 .19 $.38^a$	.01 $.47^b$ $.57^b$	-.14 $.44^a$ $.44^a$												
10.	Item 10 (Clear Explanations)	$.70^b$ -.26 .35	.30 $.48^b$ .36	-.06 $.42^a$ .27	-.04 $.35^a$ .25	.15 .25 $.45^a$	.38 .23 .33	.40 $.35^a$ .36	.43 $.39^a$ $.40^a$	-.06 $.48^b$ $.59^b$											
11.	Instructor Rating Total	$.72^b$ $.68^b$ $.80^b$	$.80^b$ $.78^b$ $.61^b$	$.52^a$ $.82^b$ $.64^b$	.45 $.86^b$ $.70^b$	.09 $.56^b$ $.63^b$	$.63^b$ $.46^b$ $.63^b$	$.63^b$ $.64^b$ $.83^b$	$.51^a$ $.50^b$ $.45^a$	$.46^a$ $.82^b$ $.75^b$	.41 $.63^b$ $.64^b$										
12.	Item C (Individual Attention)	-.11 .05 $.45^a$	.13 .23 $.48^a$	.03 .25 .14	-.06 .07 .31	.04 -.03 $.46^a$	.17 .22 $.42^a$	.25 .26 .37	.22 .31 $.41^a$	.16 .24 .35	$.50^a$ $.35^a$ .26	.13 .30 $.45^a$									
13.	Item F (Sense of Humor)	-.05 .01 $.59^b$	-.17 .25 .19	.11 .28 .14	.12 .09 $.48^a$	-.06 -.00 .08	.15 .14 $.70^b$	.27 .16 $.53^b$	.17 .15 $.54^b$	.20 .23 $.60^b$	.24 .29 .35	.06 .24 $.62^b$	.04 $.62^b$ .38								
14.	Item G (Fair in Grading)	.18 .02 $.54^b$	.29 .23 .32	.01 .01 $.53^b$	-.01 .19 .35	-.24 .03 .22	.22 .17 $.43^a$	.21 .19 $.79^b$	.12 .29 .25	.27 .19 $.56^b$	.24 .04 $.39^a$	.31 .21 $.66^b$	.21 .19 .35	-.17 .16 $.53^b$							

TABLE 9

(Cont.)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
15. Item H (Thought Provoking)	-.00	.31	.36	.00	-.01	.27	.30	.34	.20	-.04	.38	.39	.26	.12						
	.27	.24	.25	.29	.18	.20	.47[b]	.04	.37[a]	.53[b]	.42[a]	.52[b]	.37[a]	.14						
	.54[b]	.62[b]	.47[a]	.49[a]	.30	.46[a]	.53[b]	.38	.65[b]	.53[b]	.69[b]	.68[b]	.49[a]	.70[b]						
16. Item I (New Tools)	.04	.40	.32	.10	-.06	.35	.34	.29	.15	.24	.44	.32	.39	-.08	.62					
	.21	.43[a]	.29	.42[a]	.15	.32	.39[a]	.13	.29	.27	.44[a]	.16	.23	.09	.30					
	.39	.65[b]	.58[b]	.58[b]	.45[a]	.23	.46[a]	.84[b]	.53[b]	.30	.60[b]	.56[b]	.21	.50[a]	.74[b]					
17. Item J (Respect for Students)	.16	.06	-.21	-.08	-.14	-.21	.28	.24	-.07	-.02	.02	.43	-.09	-.01	.20	.08				
	.04	.16	.23	.04	-.07	.34	.24	.43[a]	.36[a]	.41[a]	.33	.83[b]	.70[b]	.13	.49[b]	.26				
	.67[b]	.34	.44[a]	.40[a]	.19	.41[a]	.71[b]	.48[a]	.59[b]	.14	.64[b]	.25	.66[b]	.67[b]	.51[b]	.37				
18. Instructor Rating Total	.07	.32	.16	.00	-.14	.26	.36	.40	.26	.19	.39	.74[b]	.34	.36	.75[b]	.65[b]	.53[a]			
	.14	.31	.27	.21	.05	.36[a]	.41[a]	.27	.35[a]	.42[a]	.42[a]	.84[b]	.76[b]	.40[a]	.71[b]	.50[b]	.86[b]			
	.06	.34	.28	.01	.52[b]	.06	.17	.43[a]	-.10	.43[a]	.19	.49[a]	-.18	.20	.39	.54[b]	.12			
19. Instructor Grade	.36	.21	.06	-.10	.45	.67[b]	.67[b]	.53[a]	-.30	.57[a]	.43	.38	.08	.23	.23	.32	-.05	.35		
	.19	.68[b]	.48[b]	.53[b]	.26	.02	.64[b]	.27	.58[b]	.59[b]	.65[b]	.20	.15	.10	.25	.41[a]	.15	.25		
	.62[b]	.55[b]	.36	.43[a]	.18	.41[a]	.55[b]	.35	.67[b]	.46[a]	.65[b]	.40	.63[b]	.66[b]	.72[b]	.44[a]	.60[b]	-.04		
20. Subject Matter	.41	.59[b]	.44	.67[b]	-.04	.47	.47	.01	.52[a]	.16	.56[a]	.12	-.14	.09	.11	-.10	.00	.04	.15	
	.35	.53[b]	.61[b]	.62[b]	.37[a]	-.07	.67[b]	.10	.55[b]	.24	.59[b]	.16	.27	.10	.52[b]	.32	.06	.31	.55[b]	
	.05	.44[a]	.30	.10	.19	-.17	-.01	-.11	-.21	-.05	.27	.24	-.17	.06	.28	.46[a]	.14	.62[b]	.13	
21. Expected Grade	.13	.27	.35	.24	.00	.28	.38	.00	.25	.00	.41	-.19	.08	.44	.19	.14	-.17	.12	.25	.28
	.05	.27	.31	.27	.14	-.03	.28	.26	.33	.22	.31	.19	.88[b]	.25	.21	.09	.09	.17	.43[a]	.47[a]
	.12	.03	.28	.25	-.15	.23	.25	-.14	.22	-.05	.13	-.12	.22	.31	.16	.22	-.10	.24	.27	.27

* Coefficients listed in descending order--Group 1 first, Group 2 second, Group 3 third.

[a] Significant at the .05 level

[b] Significant at the .01 level

TABLE 10

Correlations Among OTIS I.Q., F-, D-, and R-Scale and University of Washington Survey Scores

	I.Q.	F	D	R
Item-1	---*	.18	.16	.27
(Interprets Ideas)	-.03	.18	.23	.15
	-.14	.06	.26	.28
Item-2	---	.07	.05	.07
(Gets Me Interested)	.11	-.18	.51[b]	.11
	-.14	-.11	-.20	-.21
Item-3	---	-.03	.00	.16
(Skills in Thinking)	.11	.03	.34[a]	.27
	.28	-.08	.07	-.04
Item-4	---	.26	.45	.51[a]
(Broaden Interests)	-.13	.09	.29	.33
	.20	-.15	.05	.03
Item-5	---	.11	.08	.19
(Important Material)	.07	-.02	.15	.05
	-.20	-.01	.15	.08
Item-6	---	.19	.06	-.12
(Examples and Illustrations)	.02	.08	.19	.11
	.06	.19	.27	.25
Item-7	---	.14	.06	.11
(Motivated Me)	-.28	-.06	.10	.08
	.11	-.03	.31	.22
Item-8	---	.10	.00	-.26
(Confidence in Knowledge)	.15	-.16	.10	-.03
	-.42[a]	.12	.18	.36
Item-9	---	.06	.23	.12
(New Viewpoints)	.01	-.14	.28	.10
	.22	-.31	-.04	-.06
Item-10	---	.15	-.18	-.01
(Clear Explanations)	.20	-.05	.17	.05
	.06	-.24	-.05	-.09
Total	---	.10	.20	.09
	.03	-.04	.28	.19
	.01	-.18	.10	.01

TABLE 10

(Cont.)

	I.Q.	F	D	R
Item-C	---	-.61[b]	-.32	-.15
(Individual Attention)	-.09	-.08	.08	-.16
	-.01	.40[a]	.46	.35
Item-F	---	-.36	.05	-.51[a]
(Sense of Humor)	.15	-.16	-.13	-.02
	.04	.11	.30	.25
Item-G	---	-.20	-.37	-.06
(Fair in Grading)	-.24	-.33	-.21	-.33
	.31	-.14	.16	.008
Item-H	---	-.32	-.34	-.28
(Thought-provoking)	-.22	-.06	.17	.13
	.16	.09	.22	-.02
Item-I	---	-.24	-.15	-.30
(New tools)	-.20	.03	.11	-.01
	.19	-.04	.15	-.02
Item-J	---	-.14	.03	.13
(Respect for Students)	.05	-.14	.00	-.16
	.13	-.11	.18	.08
Total	---	-.55[a]	-.34	-.30
	-.14	-.12	.01	-.11
	-.04	.27	.16	.08
Inst. Grade	---	-.21	-.08	.29
	-.10	-.10	.12	.04
	.09	.13	.00	.08
Subj. Matter	---	.18	.21	.40
	-.17	-.27	.10	.18
	-.30	.19	.11	-.06
Expect. Grade	---	.35	.27	-.09
	.02	-.36	.13	.06
	.42[a]	-.18	.04	-.11

*Coefficients listed in descending order--Group 1 first, Group 2 second, Group 3 third.

[a] Significant at .05 level

[b] Significant at .01 level

Gough-Sanford Rigidity scores were involved in two significant correlations--identical in numerical value and opposite in sign. The positive correlation is with Item 4, "Has helped broaden my interests," and the negative correlation with Item F, "Is fair in grading." In neither instance is there much sign of a confirming correlation with one of the other two groups, and there is no particular reason why these two, among all the items, should be correlated with cognitive rigidity.

In short, the correlations between F, D, and R scores and the Student Survey scores lend little support to the idea that authoritarianism, dogmatism, or rigidity are related to students' evaluations of an instructor in a revamped, inquiry-oriented social studies methods course.

The same must be said about relations with learning. If one accepts variability in course grades as a criterion of learning, the coefficients reported in Table 11 reflect the relationships one might expect between measures of learning and Otis I.Q. scores (with the exception of the Multiple Choice Gain Score, which is of doubtful validity anyway). There are, however, no significant correlations (not even any sizeable ones) between the F-, D-, and R-Scale scores and the three learning criteria.

TABLE 11

Correlations Among Course Grades, Multiple Choice Gain,
SIAT No. 1 Gain, Otis I.Q.,
F-, D-, and R-Scale Scores

	I.Q.	F-Scale	D-Scale	R-Scale
Course Grades	---*	-.01	.08	.10
	.48^b	-.26	-.03	-.04
	.49^a	-.03	.03	.14
Multiple Choice Gain	---	---	---	---
	-.03	-.17	-.24	-.23
	---	---	---	---
SIAT No. 1 Gain	---	---	---	---
	.40^a	-.17	-.04	.02
	---	---	---	---

*Coefficients in descending order--group 1, 2, and 3.

[a] Significant at the .05 level.

[b] Significant at the .01 level.

V: OPEN-CLOSED MINDEDNESS IN TEACHER EDUCATION STUDENTS--THE STUDY

Given the tendency for educational and psycholgical researchers to conduct their investigations on conveniently available samples, it seems important to develop some understanding of the relationships between other sample characteristics and personality traits such as dogmatism and authoritarianism. This study has been concerned with the relationships, in samples of teacher education students, between dogmatism, authoritarianism, and rigidity and sample characteristics such as religious affiliation, choice of elementary or secondary level for teaching, teaching major, sex, and age. The intent has been to provide researchers with some insights into possible sources of bias in the dogmatism, authoritarianism, and rigidity scores of their samples.

The Subjects

In an attempt to obtain a nationwide sampling of students in teacher education, a number of colleagues (listed in the Acknowledgements) were contacted at different institutions and asked to help gather data. In only one instance, involving a Catholic college for women, was the request refused.

It seemed unrealistic to ask the cooperating colleagues to obtain random samples of the teacher education studentbodies at their respective institutions, so instructions were set up to help insure representative sampling. In most universities students take their professional education courses during their junior and senior years, and presence in these classes is good evidence of an intent to teach. Therefore, the cooperating colleagues were requested to obtain samples from junior and senior year education courses. They were also asked to test in as many classes as feasible. The results, as must always be the case when one relies on busy professors to do one's work, were not always completely as hoped for.

Because he was on the faculty at Utah State University at the initiation of the study, the senior investigator was able to make his own contacts for testing in the general methods and curriculum courses offered at that institution. Then, during a year's tenure on the faculty of The Ohio State University, he was able to arrange for testing. Consequently, those two samples were the largest (U.S.U. undergraduates, N = 390; O.S.U., N = 317). During a summer's professorship at the University of Washington, the senior investigator also obtained data from the students (N = 34) in the classes he taught there. Also, he was asked to provide the combined F-, D-, and R-Scale instrument in two instances--one for an unpublished predictive study with graduate students at Utah State University, the other for assessment purposes with a group of 57 Peace Corps volunteers undergoing training at U.S.U.--and, in turn, requested the data from the test administrations. In addition, samples were obtained from Boston University (N = 122), the University of Oklahoma (N = 118), the University of Michigan (N = 85), the University of California at Santa Barbara (N = 66), and the Harvard Graduate School of Education (N = 108).

Some descriptive data on the samples are presented in Tables 12 through 16. It probably is not necessary to mention that numbers from the different tables will not always match or check out because all information was not available on every student. Inspection of these tables reveals some of the weaknesses in the samples. Although one would expect a sampling of teacher education students to contain more women than men, the ratio is particularly out of balance in the Boston University, University of California, and the University of Michigan samples (Table 12). The reason for these results can be seen in Table 13. In each instance, the sample is either entirely or heavily from elementary education courses, and elementary education traditionally attracts an even greater proportion of women than does secondary education.

TABLE 12

Sex of American Subjects

University	Male	Female
Boston	7	115
California	10	56
Harvard	29	79
Michigan	15	70
Oklahoma	24	91
Utah State	148	243
Utah State--Grad. Ss.	78	31
Washington	20	13
Ohio State	103	213
Peace Corps	40	17
Total	474	928

Table 14 reveals another discrepancy between intent and sample. The University of Michigan sample is made up primarily of persons who had completed their bachelor's work, had some teaching experience, and had come back for more course work in extension classes. The sample of U.S.U. graduate students and those from the University of Washington had not been contemplated in the original design of the study so are "added bonuses" that need to be kept in mind for their discrepant nature. The Harvard sample is a graduate one because Harvard's teacher education program enrolls practically

TABLE 13

Number of American Subjects in Elementary or Secondary Education

University	Elementary	Secondary
Boston	118	
California	47	18
Harvard	34	74
Michigan	62	19
Oklahoma	27	88
Utah State	151	233
Utah State--Grad. Ss.	2	27
Ohio State	109	182

TABLE 14

Year in College of American Subjects

University	Soph.	Jr.	Sr.	Grad.
Boston		107	14	
California		48	11	7
Harvard				109
Michigan			3	82
Oklahoma		28	80	1
Utah State	6	52	307	22
Utah State--Grad. Ss.				109
Washington				34
Ohio State		15	287	13

no one but college graduates with liberal arts degrees and no teaching experience, seeking the Masters of Arts in Teaching. The negligible correlations of the F-, D-, and R-Scales with age and year in college (Table 17) suggest that the occasional use of graduate students in the analyses which follow should not have had an effect on the results.

Table 15 indicates that there was also considerable variation from university to university in the teaching majors of the students tested. This variability will need to be kept in mind in interpreting analyses of differences among the subjects with different majors. As the data in Table 16 indicate, there is considerable variability in the religious groups present in the samples from different universities. It would be extremely easy to confound subject matter and religious differences in analyses when all or most of the subjects in one teaching major came from a university, such as Utah State University, where one religion dominates the sample.

One other possible deviation in sampling should be noted. While all other tests were administered during regular class periods, those for the Harvard elementary education students were handed out to be completed at home and returned to the instructor on a voluntary basis. Volunteers might differ from nonvolunteers in their scores on the three personality scales used in this study. However, analyses of the data to be presented later in this report revealed no significant differences in mean F, D, or R scores for the Harvard elementary education volunteers and the Harvard secondary education group, who were nonvolunteers.

The Data

Like the data reported in the previous chapter, those for this part of the study were collected using an instrument containing combined F-, D-, and R-Scales. The same forms of the three scales, including the 28-item F-Scale were used. Answer sheets included spaces for the subjects to fill in their sex, religion, teaching major, and age, as well as places to check year in school and whether they were in elementary or secondary education.

Reliability coefficients (split-half, corrected with the Spearman-Brown formula) for the three scales for the total sample (N = 1297), excluding the Utah State University graduate students, were: F-Scale, r = .55; D-Scale, r = .90; R-Scale, r = .79.

The low reliability coefficient for the F-Scale as compared to the two other scales is perplexing because, typically, higher coefficients have been reported in the literature (e.g., Kerlinger & Rokeach, 1966, r = .82; Lambert, 1960, r = .88; Rokeach & Fruchter, 1956, r = .84; Rowan, 1968, r = .86 over an 8-year lapse in time). Although the coefficient for the F-Scale was also lower for the U.S.U. methods course study reported in the previous chapter, it was at least "respectable" (r = .74). Even with the German sample, the reliability coefficient was higher (r = .76), although again it was the lowest of the three. Inspection of the data and rerunning the correlations have provided no reason to discount the low reliability coefficient.

There is, however, some evidence that the low reliability estimate for the F-Scale may be due to a chance poor split of items for the split-half

TABLE 15

Subject Majors of American Subjects

Teaching Major	Bost.*	Cal.	Harv.	Mich.	Okla.	USU	USU Grad.*	Wash.	Ohio	Total
Art			1		5	18		2	1	27
Business Educ.				1	11	29		1	4	46
English			36	5	5	45		7	33	131
Math				1	10	17		1	14	43
Music				2		7			22	31
Physical Educ.				2		40			13	55
Science			9		11	30		2	35	87
Social Studies		15	30	5	13	37		17	49	166
Library				1		1				2
Home Econ.				1	10	8		1	11	31
Core								1		1
Psychology						6				6
Languages					14	12			7	33
Speech					7	15			7	29
Counseling									2	2
Vocational Educ.						5			1	6
Tech. & Indust. Educ.					1	1			1	3
Agricultural Educ.						1				1
Special Educ. & Remed. Reading				5	1				10	16
Miscellaneous					2				5	7

* Boston University elementary students did not indicate teaching major, and teaching major data was not available for Utah State University graduate students.

TABLE 16

Religion of American Subjects

Religion	Bost.	Calif.	Harv.	Mich.	Okla.	Utah State	Utah State Grads.	Wash.	Ohio	Peace	Total
Agnostic						2		3	4		9
Catholic	15	10	11	17	10	8	1	5	43	18	138
Episcopalian	7	6	8	9	8	3		2	11	4	58
Jewish	77	2	33	4	3	2	1		28	2	152
Mormon						341	80		1		422
Lutheran	1	3		6	2	2	1	2	23	1	41
Methodist	3	8	5	20	24	1		2	74	3	140
Presbyterian	2	14	8	15	18	6	2	8	36	5	114
Unitarian		1	8			2		3	3	3	20
Community Brethren	1							1			2
Protestant	5		5		2	1	1	2	13		29
Baptist	1	5		4	21	2	3	4	3	1	44
Congregational	4	3	11	2	1				3	2	26

TABLE 16

Religion of American Subjects (Cont.)

Religion	Bost.	Calif.	Harv.	Mich.	Okla.	Utah State	Utah State Grads.	Wash.	Ohio	Peace	Total
Quaker			1								1
United Church of Christ		1	1		5	1			19		27
Greek Orthodox	1		1						3		5
Moslem						1					1
Advent Christian					1				1		2
First Christian	1				9	1					11
Christian				1	4	1	1	1	1		9
Western Orthodox					1						1
Christian Scientist	1		2	1					2	1	7
Evangelical United Brethren				1					10	1	12
Salvation Army				1							1
None	5	10	8		2	13	2	1	22	1	64
Atheist									1		1
Left blank		1	6	2	4	4	16		5	15	53

TABLE 16

Religion of American Subjects
(Cont.)

Religion	Bost.	Calif.	Harv.	Mich.	Okla.	Utah State	Utah State Grads.	Wash.	Ohio	Peace	Total
Bahai									1		1
Church of God									1		1
Seven Day Adventist									1		1
Disciples of Christ									4		4
Nazarene									2		2
Buddhist									1		1
Russian Orthodox									1		1

computations for this study. Cronbach (1967) has argued that the reliability coefficient obtained by the Kuder-Richardson coefficient of equivalence (Kuder & Richardson, 1937) is the mean of all of the splits of a test that might be made in computing the split-half coefficient. This mean is an average that is based on poor as well as good splits, with obtained split-half coefficients falling both below and above the mean. A coefficient of equivalence was computed for the F-Scale using the Kuder-Richardson Formula 21 and treating the total possible points on the test (7 x 28 = 196) as n, the number of items (assuming n to mean, total possible points). The coefficient obtained was .90. (The coefficients of equivalence for the D- and R-Scales were .88 and .86, respectively.) In addition, the magnitude of the correlation ($r = .70$) between the F-Scale and the D-Scale (Table 17) suggests that the true reliability of the F-Scale is higher than the split-half estimate of .55.

Results

The intercorrelations among the three scales, year in college, age, and sex (scored as a two-point dummy variable with male = 1, female = 2) are presented in Table 17. As with the correlations for the social studies methods course samples reported in Chapter IV, there are no surprises. The correlation between the F- and D-Scales is high, but within the range reported in previous studies. The correlation between D and R scores is within the range of those reported by Rokeach (1960, p. 193). The correlations between age and the F-, D-, and R-Scales are negligible. The same is true for sex. The coefficients for sex approach significance for the F- and D-Scales because of the large number of subjects involved (N = 1403 for these correlations). Although the negative relationships indicate that males had higher scores on the scales, the correlation is so slight as to be meaningless for explaining variability in either authoritarianism or dogmatism. Year in college is significantly correlated with F- and D-Scale scores. Again, however, the coefficients are so small (-.15 and -.13) as to explain little variability, although they do confirm the expectation from the review of literature that dogmatism and authoritarianism decline with education. The correlations between F and D scores and year in college were small enough to justify pooling undergraduate and graduate samples for some of the analyses reported on the following pages.

As would be expected, year in college and age show a high correlation. The coefficient was probably not higher than .45 because it is common practice for Mormon males to go on missions for the church either before entering college or after one or two years of college. This means that undergraduates at Utah State University tend to be older than is typical, and the U.S.U. sample constituted a large proportion of the total sample. The negative correlations between year in college and sex and age might also be mentioned. One would expect to find more males in the later years of college, especially among graduate students. The negative correlation between sex and age undoubtedly reflects the tendency for more males to take graduate courses, as well as the missionary effect (few females go on missions) at Utah State University.

TABLE 17

Correlations Among F-, D-, and R-Scale Scores, Age, Year in College, and Sex for the American Sample

	1	2	3	4	5
1. Year in college					
2. Age	.45				
3. Sex	-.21	-.20			
4. F-Scale	-.15	.01	-.06		
5. D-Scale	-.13	-.04	-.07	.70	
6. R-Scale	-.05	.04	-.04	.53	.47

Aside from the correlations, several analyses were carried out. Perhaps the best question from which to start reporting these is, "Were there significant differences among the different university samples on the three scales--authoritarianism, dogmatism, and rigidity?" Tables 18 through 23 present the results of analyses of variance to test the significance of mean differences among the university and Peace Corps groups on the three scales and of the use of Duncan's New Multiple Range Test to test for the significance of the differences between pairs of means when the difference among means was significant at the .05 level.

In all three analyses of variance (Tables 18, 19, and 20), the F-Ratio is significant beyond the .01 level, with the magnitude of the F-Ratio decreasing from the F-Scale to the D-Scale to the R-Scale. Table 21 indicates that the difference in F-Scale means for the highest sample (Utah State University, graduate students excluded) and the lowest (Harvard) was 27.73. The Utah State University mean was significantly higher (at the .05 level) than the mean for each of the other samples. Basically the same pattern held true for the dogmatism means (Table 22), with a difference between the U.S.U. and the Harvard means of 20.21. However, the U.S.U. mean is not significantly different from those of the two groups closest to it--Boston University and the University of Oklahoma. It is worth noting, too, that although the Harvard mean on the F-Scale was significantly lower than any other sample mean, there are three means on the D-Scale that do not differ significantly from it (University of California, University of Washington, and the Peace Corps).

The order of means for the R-Scale (Table 23) is quite different than for the other two scales, with the U.S.U. mean fourth in magnitude. This change in pattern is in line with the lower correlations between the R-Scale

TABLE 18

Analysis of Variance for F-Scale Means of American Subjects Grouped by University and Peace Corps

University	N	Test Mean	Item Mean	S.D.	F-Ratio*
1. Utah State (Graduate Ss. excluded)	390	96.99	3.46	19.27	
2. Boston	122	92.99	3.32	19.63	
3. Oklahoma	118	90.58	3.23	20.95	
4. Michigan	85	83.74	2.99	20.95	
5. Ohio State	317	83.40	2.98	19.65	
6. California	66	80.04	2.86	16.57	
7. Washington	34	79.18	2.83	18.04	
8. Peace Corps	57	78.72	2.81	19.15	
9. Harvard	108	69.27	2.47	18.12	30.56**

* d.f. = 8/1288

** For d.f. = 8/1000, $F_{.05} = 1.95$, $F_{.01} = 2.53$

and the F- and D-Scales as compared to that between the F- and D-Scales. As might be expected with the lower F-Ratio, the magnitude of the difference between the two extreme means (University of Oklahoma and Harvard) is smaller (13.34) than was the case with the F- and D-Scales, and there are fewer significant differences between pairs of means.

All in all, the analyses provide rather striking evidence of the fluctuations in scores on the three scales that can be expected in drawing samples from different universities. One caveat needs to be entered, however. The analysis of variance model assumes homogeneity among the group variances. Although Box (1953) has demonstrated that the analysis of variance with its F-Ratio is a robust test, its insensitivity to variance heterogeneity appears to decrease as the group sizes depart from equality.

Many of the variances reported in the following tables are strikingly different, to the point that no test of significance is needed to confirm

TABLE 19

Analysis of Variance for D-Scale Means of American Subjects
Grouped by University and Peace Corps

University	N	Mean	S.D.	F-Ratio*
1. Utah State (Graduate Ss. excluded)	390	146.71	23.18	
2. Boston	122	142.63	23.44	
3. Oklahoma	118	142.04	23.86	
4. Ohio State	317	140.62	22.77	
5. California	66	133.88	21.04	
6. Michigan	85	133.87	24.16	
7. Washington	34	131.53	23.55	
8. Peace Corps	57	129.44	22.22	
9. Harvard	108	126.50	23.69	12.32**

* d.f. = 8/1288

** For d.f. = 8/1000, $F_{.05} = 1.95$, $F_{.01} = 2.53$

the difference. Even in Table 18, where the standard deviations are, by inspection, quite similar (ranging from 16.57 to 20.95), there appears to be statistically significant heterogeneity, although this, too, is difficult to check with unequal observations per group. Following the procedure recommended by Hartley (Winer, 1962, pp. 93-94), an F_{max} of 1.60 was obtained for the Table 18 variances with d.f. = 9/389. An F_{max} of 1.00 is significant at both the .05 and .01 levels with d.f. = 9/∞. Cochran's C (Winer, 1962, p. 94-95) was also computed, and C = .13 with d.f. = 9/389. With d.f. = 9/144 (the closest value in the table, Winer, 1962, p. 654), C must reach .14 to be significant at the .05 level and .15 to be significant at the .01 level. The hypothesis of homogeneity of variances hardly seems tenable for the groups in Table 18.

Many of the analyses that follow, then, will be plagued by heterogeneity among the variances accompanied by unequal numbers of observations per group. Tests of heterogeneity have not been computed because the variability among the standard deviations is usually obvious and because, in any event, no

TABLE 20

Analysis of Variance for R-Scale Means of American Subjects Grouped by University and Peace Corps

University	N	Mean	S.D.	F-Ratio*
1. Oklahoma	118	91.44	15.74	
2. Boston	122	89.42	15.48	
3. Michigan	85	89.10	16.55	
4. Utah State (Graduate Ss. excluded)	390	88.99	14.35	
5. Washington	34	84.71	15.83	
6. Ohio State	317	84.50	15.57	
7. California	66	82.88	13.69	
8. Peace Corps	57	81.51	14.92	
9. Harvard	108	78.10	18.83	9.42**

* d.f. = 8/1289

** For d.f. = 8/1000, $F_{.05} = 1.95$, $F_{.01} = 2.53$

statistical program for analysis of variance with heterogeneous variances was available. Obviously, then, caution must be exercised in interpreting some of the analyses. Given the evidence of the robustness of the F-Test and the lack of knowledge as to the effect of departures from homogeneity of variances combined with unequal group size, it seems reasonable generally to accept the findings. In many instances, the striking differences between or among the means, or the obvious similarities, make the statistical tests almost irrelevant.

It should also be noted that little attempt will be made to interpret the differing variances (standard deviations, as reported in the tables). Discussions of authoritarianism and dogmatism have typically been in terms of the central tendencies of groups. For example, it has been argued, and findings indicate, that conservative religious groups will have higher F-Scale means than liberal religious groups. Rokeach (1960) has argued and presented preliminary evidence that religious groups on both extremes of a conservative-liberal continuum will have high Dogmatism Scale means. On the other hand, theoretical considerations of the relationship between, for example, religious faiths and variability of F or D scores have not been published. Given the

TABLE 21

Mean Differences[a] on the F-Scale for American Subjects Grouped by University and Peace Corps

University	1	2	3	4	5	6	7	8	9
1. Utah State (Graduate Ss. excl.)		4.00*	6.41*	13.25*	13.60*	16.95*	17.82*	18.27*	27.73*
2. Boston			2.41	9.25*	9.59*	12.95*	13.82*	14.27*	23.72*
3. Oklahoma				6.84*	7.19*	10.53*	11.40*	11.86*	21.32*
4. Michigan					.34	3.70	4.56	5.02	14.47*
5. Ohio State						3.35	4.22	4.68	14.13*
6. California							.87	1.33	10.78*
7. Washington								.46	9.91*
8. Peace Corps									9.45*
9. Harvard									

[a] Due to rounding errors, the mean differences reported in this and the following tables may not agree exactly with those obtained by subtracting the means presented in the analysis of variance tables.

* Significant at the .05 level, Duncan's New Multiple Range Test.

lack of theoretical speculation about variability, and the unconvincing nature of *ex post facto* interpretations, the focus of reporting will be on central tendency rather than dispersion.

A couple of additional points of interest in regard to the means of the college groups bear mentioning. First, one might expect that Peace Corps volunteers, by virtue of their decision to dedicate a portion of their lives to working in alien cultures, would be less authoritarian, dogmatic, and/or rigid than college students in general. The analyses bear out this expectation. Peace Corps volunteers in the U.S.U. training program did have lower mean F, D, and R scores than any of the university samples, with the exception of Harvard. Not only were the Peace Corps means second smallest in magnitude in each case, but that mean was significantly lower than three other means on the F-Scale and four on the D- and R-Scales. There also was

TABLE 22

Mean Differences on the F-Scale for American Subjects
Grouped by University and Peace Corps

University	1	2	3	4	5	6	7	8	9
1. Utah State (Graduate Ss. excl.)		4.08	4.67	6.09*	12.83*	12.84*	15.18*	17.27*	20.21*
2. Boston			.59	2.01	8.75*	8.76*	11.10*	13.19*	16.13*
3. Oklahoma				1.42	8.16*	8.17*	10.51*	12.60*	15.54*
4. Ohio State					6.74*	6.75*	9.09*	11.18*	14.12*
5. California						.008	2.35	4.44	7.38
6. Michigan							2.34	4.43	7.37
7. Washington								2.09	5.03
8. Peace Corps									2.94
9. Harvard									

* Significant at the .05 level, Duncan's New Multiple Range Test

a significant mean difference between the Peace Corps and the pooled university samples on each of the three scales (see Table 24). Any temptation to attribute lower authoritarianism, dogmatism, or rigidity to Peace Corps volunteers as compared to college students in teacher education must be tempered by the knowledge that the Peace Corps means did not differ significantly from some pairs of college means, and that the Harvard mean was lower in all three analyses--although significantly so only with the F-Scale.

It is also interesting to compare the item means for the F-Scale as reported in Table 18 with those for the various previous studies reported in Table 1. The highest mean in Table 18 is only slightly higher than the lowest one in Table 1. No tests of significance were run between the two sets of means, but the slight overlap in the distributions (placing the means in Table 1 in rank order) is striking.

Comparisons between the two tables have some relevance for questions about the authoritarianism of students in teacher education as compared to other college students. Certainly, there is little in these tables to suggest that teacher trainees are more authoritarian than other college students, and much to suggest that they may be less so. Of course, any such

TABLE 24

Analysis of Variance for the F-, D-, and R-Scales Means of University and Peace Corps Subjects

F-Scale

	N	Mean	S.D.	F-Ratio*
Peace Corps	57	78.72	19.15	
University	1348	88.33	21.22	11.29**

D-Scale

	N	Mean	S.D.	F-Ratio*
Peace Corps	57	129.44	22.22	
University	1348	140.62	23.70	12.21**

R-Scale

	N	Mean	S.D.	F-Ratio*
Peace Corps	57	81.51	14.92	
University	1348	87.11	15.91	6.80**

* d.f. = 1/1403

** For d.f. = 1/1000, $F_{.05} = 3.85$, $F_{.01} = 6.66$

TABLE 23

Mean Differences on the R-Scale for American Subjects
Grouped by University and Peace Corps

University	1	2	3	4	5	6	7	8	9
1. Oklahoma		2.02	2.34	2.45	6.74*	6.94*	8.56*	9.93*	13.34*
2. Boston			3.13	4.29	4.71	4.91*	6.54*	7.91*	11.32*
3. Michigan				.12	4.40	4.60*	6.23*	7.60*	11.00*
4. Utah State (Graduate Ss. excl.)					4.28	4.48*	6.11*	7.48*	10.89*
5. Washington						.20	1.83	3.20	6.60
6. Ohio State							1.63	3.00	6.40*
7. California								1.37	4.78
8. Peace Corps									3.41
9. Harvard									

* Significant at the .05 level, Duncan's New Multiple Range test.

conclusion must be cautiously drawn because comparison of the two tables confounds the time factor (there may have been a general decrease in F-Scale scores in this society from 1950 to the present) and the subcultural factor to be explored next in this chapter. Obviously, samples drawn from the same universities at the same times are needed for valid comparisons between education and other college students.

Religion

The initial impetus for a study comparing different university samples came from a concern with the bias in central tendency that might be introduced by using a sample heavily dominated by one religious group--in this case, Mormons. The question about the impact of religious affiliation has remained of paramount concern, and looking at the data from that point of view is most revealing in terms of the influences that subcultural variations can have on personality test norms.

Table 25 reports the results of an analysis of variance comparing the F-Scale means of seventeen religious groupings, including those subjects

TABLE 25

Analysis of Variance for F-Scale Means of American Subjects Grouped by Religion

Religion	N	Mean	S.D.	F-Ratio*
1. Mormon	421	97.19	19.23	
2. Baptist	45	91.60	18.25	
3. United Church of Christ	27	89.37	21.81	
4. Evang. United Brethren	12	88.75	15.02	
5. Advent Christ., First Christ., Christian	22	88.14	17.96	
6. Presbyterian	115	87.16	20.19	
7. Episcopalian	58	85.67	20.58	
8. Catholic	138	85.23	21.06	
9. Methodist	142	85.12	19.95	
10. Lutheran	41	84.80	17.98	
11. Congregationalist	26	84.50	17.84	
12. Protestant	31	84.10	20.56	
13. Left blank	53	83.21	24.22	
14. Jewish	152	82.47	21.00	
15. None	64	71.48	17.48	
16. Unitarian	21	68.19	17.60	
17. Agnostic	9	64.78	19.63	11.92**

* d.f. = 16/1360

** For d.f. = 12/1000, $F_{.05} = 1.76$, $F_{.01} = 2.20$

who responded "none" or left the space for religion blank. The F-Ratio of 11.92 is significant beyond the .01 level. The position of the Mormon group, all but one of whom were from Utah State University, confirmed the need for concern about a sample dominated by that religious group.

The mean differences between different religious groups (Table 26) support the studies reviewed earlier which indicate that the F-Scale does correlate with religious conservatism. It is interesting that the F-Scale mean for the Mormon group does not differ significantly from the means of the other four groups at the top of the ranked order, and each of the other groups (Baptist, United Church of Christ, Evangelical United Brethren, and the combined Advent Christian, First Christian, and Christian group) is generally considered to be a fundamentalist, conservative religious group. The clustering of the "None," Unitarian, and agnostic groups at the bottom of the rankings (with no significant differences between their means) is further evidence confirming the relationship of authoritarianism, as measured by the F-Scale, and religious conservatism.

Obviously, differences in fundamentalism are obscured within some of the groups falling in the middle of the ranks. Within the Methodist, Lutheran, and Jewish faiths, for example, there is considerable variability in fundamentalism from church to church or synagogue to synagogue. Nevertheless, the general order of rankings attests to the tendency of the F-Scale to measure right wing authoritarianism. Also, the rank position of the Mormon sample, along with the rather large differences between many of the sample means (e.g., 32.41 between the Mormon and agnostic means) indicates the possible importance to research of the use of university samples drawn from different religious subcultures.

The results with the Dogmatism Scale (Table 27) are similar to those with the F-Scale, although there are some minor shifts in rank order. Again, the fundamentalist groups tend to cluster at the top of the rankings, with groups with liberal religious leanings clustering at the bottom.

These findings, as did those of Feather (1967), dispute Rokeach's (1960, pp. 109-115) claim that both religious liberals and conservatives would score high on the Dogmatism Scale. It will be recalled from Table 16 that only one of the subjects in this study indicated that he was an atheist. On the other hand, 64 subjects wrote "none" in the space for religion. In this society, with its emphasis on maintaining religious affiliation regardless of involvement in church activities, committing one's self in writing to having no religious affiliation indicates a strong "left of center" position in regard to religion. Therefore, it would appear difficult to argue that the data do not provide a test of Rokeach's hypothesis because the sample contains no extreme left of center group as a counterpart to the four or five fundamentalist groups which rank at the top in dogmatism means. The low dogmatism mean of the "none" group, not to mention the low means of the agnostic and Unitarian groups, is, then, of particular interest. In addition, the general lack of significant differences between the means of religious groups (Table 28) once one gets beyond the Mormon and Evangelical United Brethren raises serious questions about the expectation that the Dogmatism Scale will discriminate among subjects with differing degrees of religious conservatism, much less pick up the dogmatism of both religious fundamentalists and religious liberals.

TABLE 26

Mean Differences on the F-Scale for American Subjects Grouped by Religion

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Mormon	1		5.59	7.82	8.44	9.05	10.03*	11.52*	11.96*	12.07*	12.38*	12.69*	13.09*	13.98*	14.71*	25.70*	29.00*	32.41*
Baptist	2			2.23	2.85	3.46	4.44	5.93	6.37	6.48	6.80	7.10	7.50	8.39	9.13*	20.12*	23.41*	26.82*
United Ch. of Christ	3				.62	1.23	2.21	3.70	4.14	4.25	4.57	4.87	5.27	6.16	6.90	17.89*	21.18*	24.59*
Evang. Br.	4					.61	1.59	3.08	3.52	3.63	3.95	4.25	4.65	5.54	6.28	17.27*	20.56*	23.97*
Ad. Christ., First Christ., Christian	5						.98	2.46	2.90	3.02	3.33	3.64	4.04	4.92	5.66	16.65*	19.95*	23.36*
Presbyterian	6							1.48	1.92	2.04	2.35	2.66	3.06	3.94	4.68	15.67*	18.97*	22.38*
Episcopalian	7								.44	.55	.87	1.17	1.58	2.46	3.20	14.19*	17.48*	20.90*
Catholic	8									.11	.43	.73	1.13	2.02	2.76	13.75*	17.04*	20.45*
Methodist	9										.32	.62	1.02	1.91	2.65	13.64*	16.93*	20.34*
Lutheran	10											.30	.71	1.60	2.33	13.32*	16.61*	20.03*

TABLE 26

Mean Differences on the F-Scale for American Subjects Grouped by Religion
(Cont.)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Congregationalist	11												.40	1.29	2.03	13.02*	16.31*	19.72*
Protestant	12													.88	1.62	12.61*	15.91*	19.32*
Left Blank	13														.74	11.73*	15.02*	18.43*
Jewish	14															10.99*	14.28*	17.70*
None	15																3.29	6.71
Unitarian	16																	3.41
Agnostic	17																	

* Significant at the .05 level, Duncan's New Multiple Range Test

TABLE 27

Analysis of Variance for D-Scale Means of American Subjects Grouped by Religion

Religion	N	Mean	S.D.	F-Ratio*
1. Evang. United Brethren	12	148.08	12.92	
2. Mormon	421	146.18	22.72	
3. United Church of Christ	27	144.63	24.26	
4. Baptist	45	143.98	19.11	
5. Episcopalian	58	140.81	23.72	
6. Methodist	142	140.69	24.77	
7. Jewish	152	138.70	24.18	
8. Presbyterian	115	138.18	22.57	
9. Advent Christ., First Christ., Christian	22	137.54	23.94	
10. Lutheran	41	137.29	22.05	
11. Protestant	31	136.13	25.03	
12. Catholic	138	136.00	23.65	
13. Congregational	26	133.96	19.96	
14. Left blank	53	131.94	22.97	
15. Unitarian	21	129.14	21.72	
16. None	64	127.98	23.88	
17. Agnostic	9	122.00	17.43	4.73**

* d.f. = 16/1360

** For d.f. = 12/1000, $F_{.05} = 1.76$, $F_{.01} = 2.20$

TABLE 28

Mean Differences on the D-Scale for American Subjects Grouped by Religion

Religion	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Evang. Br.	1	1.90	3.45	4.11	7.27	7.39	9.39	9.90	10.54	10.79	11.95	12.08	14.12	16.14	18.94	20.10*	26.08*
Mormon	2		1.55	2.20	5.37	5.49*	7.48*	8.00*	8.64	8.89*	10.05	10.18*	12.22*	14.24*	17.04*	18.20*	24.18*
United Ch. of Christ	3			.65	3.82	3.93	5.93	6.45	7.08	7.34	8.50	8.63	10.67	12.69	15.49	16.64*	22.63*
Baptist	4				3.17	3.29	5.28	5.80	6.43	6.68	7.85	7.98	10.02	12.04*	14.83*	15.99*	21.98*
Episcopalian	5					.12	2.11	2.63	3.26	3.52	4.68	4.81	6.85	8.87	11.67	12.83*	18.81
Methodist	6						1.99	2.51	3.14	3.40	4.56	4.69	6.73	8.75*	11.55	12.71*	18.69
Jewish	7							.52	1.15	1.40	2.57	2.70	4.74	6.76	9.56	10.71*	16.70
Presbyterian	8								.64	.89	2.05	2.18	4.22	6.24	9.04	10.20*	16.18
Ad. Christ., First Christ., Christian	9									.25	1.42	1.54	3.58	5.60	8.40	9.56	15.54
Lutheran	10										1.16	1.29	3.33	5.35	8.15	9.31	15.29

TABLE 28

Mean Differences on the D-Scale for American Subjects Grouped by Religion
(Cont.)

Religion		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Protestant	11												.13	2.17	4.19	6.99	8.14	14.13
Catholic	12													2.04	4.06	6.86	8.02*	14.00
Congregational	13														2.02	4.82	5.98	11.96
Left blank	14															2.80	3.96	9.94
Unitarian	15																1.16	7.14
None	16																	5.98
Agnostic	17																	

* Significant at the .05 level, Duncan's New Multiple Range Test

The results with the R-Scale (Tables 29 and 30) are of interest primarily because of the greater reshuffling of rank order than was the case from the F-Scale to the D-Scale. Although the Unitarian, "none," and agnostic groups maintain their positions at the bottom of the distribution of means, there is considerable shifting among the others. Again, there is confirmation for the conjecture that the R-Scale is measuring something different from the D-Scale.

Some other groupings of data were made to provide information about the possible differences among groups that fall within common religious categories. Table 31 presents the results of analyses of variance for five groupings of religious faiths--Mormon, Protestant, Catholic, Jewish, and disclaimers of religious beliefs (agnostics, those who wrote "none" or left the space for religion blank). Two of these groupings (Mormons and Catholics) involve only one church each. The Protestant grouping combines several churches with considerable doctrinal differences, as does the Jewish grouping. The disclaimers" category has a different sort of shortcoming. Those who wrote "agnostic" or "none" in the space for religion are probably expressing similar stances toward organized religion. Yet those who left the space blank may have been doing so because they had no religious affiliation or because, for one reason or another, they refused to divulge such information. Given the common claim that right wing authoritarians tend to resist "prying into personal matters" (e.g., the attacks of conservative groups on school testing programs), the "left blank" category might contain many religious conservatives. The results of testing for the significance of means among religious groups as previously reported (Tables 25, 27, and 29) do not support this argument. The position of the "left blank" group close to the bottom of the ranked means on each of the three scales suggests that these respondents were more similar to the agnostics and "nones" than to the conservative religious groups. On the other hand, the larger standard deviation for the "left blank" group, at least on the F-Scale (Table 25), indicates that despite the low central tendency, some conservative "refusers" may be in this category.

Despite the rough nature of the groupings, they do reflect common religious classifications. While this gives them some usefulness as a basis for analysis, it also means that care in interpretation is necessary to avoid the use of research data to stereotype religious groups.

With all three scales, there are significant differences among the means of the five religious groupings (Table 31). In each instance the Mormon mean is the highest and the agnostics, "none," and "left blank" mean the lowest, with the other three groups juggling positions. Tables 32, 33, and 34 reveal that the differences between means for the two tests also follow similar patterns. In each case, the mean for the Mormon group is significantly higher than each of the other three means, the Protestant and Catholic means are not significantly different from one another, and the "disclaimers" (agnostics, "none," and "left blank") mean is significantly lower than any of the others. The one discrepancy is that, for the F-Scale, the Jewish mean is also significantly lower than the three of greater magnitude.

Comparing the F-Scale and D-Scale means from this study with those of the religious groups reported by Rokeach (1960, pp. 110, 112) provides an interesting basis for speculation about the relative authoritarianism and

TABLE 29

Analysis of Variance for R-Scale Means of American Subjects Grouped by Religion

Religion	N	Mean	S.D.	F-Ratio*
1. Baptist	45	94.13	13.97	
2. United Church of Christ	27	91.15	13.58	
3. Mormon	422	89.94	14.33	
4. Evang. United Brethren	12	88.75	9.17	
5. Presbyterian	115	87.63	15.64	
6. Catholic	138	87.55	15.96	
7. Advent Christ., First Christ., Christian	22	87.32	15.38	
8. Methodist	142	87.06	16.02	
9. Jewish	152	85.79	17.82	
10. Congregational	26	85.15	13.51	
11. Lutheran	41	84.95	15.51	
12. Protestant	31	84.16	15.66	
13. Left blank	53	82.79	15.46	
14. Episcopalian	58	81.76	17.03	
15. Unitarian	21	80.33	11.76	
16. None	64	75.14	12.53	
17. Agnostic	9	68.78	11.11	6.02*

* d.f. = 16/1361

** For d.f. = 12/1000, $F_{.05} = 1.76$, $F_{.01} = 2.20$

TABLE 30

Mean Differences on the R-Scale for American Subjects Grouped by Religion

Religion		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Baptist	1		2.98	4.19	5.38	6.51*	6.58*	6.82	7.08*	8.34*	8.98*	9.18*	9.97*	11.34*	12.38*	13.80*	18.99*	25.36*
United Ch. of Christ	2			1.21	2.40	3.52	3.60	3.83	4.09	5.36	6.00	6.20	6.99	8.36	9.39*	10.82*	16.01*	22.37*
Mormon	3				1.19	2.31	2.39	2.62	2.88	4.15*	4.79	4.99	5.78	7.15*	8.18*	9.61*	14.80*	21.16*
Evang. Br.	4					1.12	1.20	1.43	1.69	2.96	3.60	3.80	4.59	5.96	6.99	8.42	13.61*	19.97*
Presbyterian	5						.08	.31	.57	1.84	2.47	2.68	3.46	4.84	5.87*	7.29	12.49*	18.85*
Catholic	6							.23	.49	1.76	2.40	2.60	3.39	4.76	5.79*	7.22	12.41*	18.77*
Ad. Christ., First Christ, Christian	7								.26	1.53	2.16	2.37	3.16	4.53	5.56	6.98	12.18*	18.54*
Methodist	8									1.27	1.90	2.10	2.90	4.27	5.30	6.72	11.92*	18.28*
Jewish	9										.64	.84	1.63	3.00	4.03	5.46	10.65*	17.01*
Congregational	10											.20	.99	2.36	3.40	4.82	10.01*	16.38*

TABLE 30

Mean Differences on the R-Scale for American Subjects Grouped by Religion
(Cont.)

Religion		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Lutheran	11												.79	2.16	3.19	4.62	9.81*	16.17*
Protestant	12													1.37	2.40	3.83	9.02*	15.38*
Left blank	13														1.03	2.46	7.65*	14.01*
Episcopalian	14															1.42	6.62*	12.98*
Unitarian	15																5.19	11.56
None	16																	6.36
Agnostic	17																	

* Significant at the .05 level, Duncan's New Multiple Range Test

TABLE 31

Analyses of Variance for F-, D-, and R-Scales Means of American Subjects Grouped by Religious Classifications

F-Scale

Religious Category	N	Mean	S.D.	F-Ratio*
1. Mormon	421	97.19	19.23	
2. Protestant	553	85.83	19.97	
3. Catholic	138	85.23	21.06	
4. Jewish	152	82.47	21.00	
5. Agnostic, Left blank, None	125	75.88	21.66	38.21**

D-Scale

Religious Category	N	Mean	S.D.	F-Ratio*
1. Mormon	421	146.18	22.72	
2. Protestant	553	139.54	23.17	
3. Jewish	152	138.70	24.18	
4. Catholic	138	136.00	23.65	
5. Agnostic, Left blank, None	125	129.20	23.17	15.37**

R-Scale

Religious Category	N	Mean	S.D.	F-Ratio*
1. Mormon	421	89.94	18.35	
2. Catholic	138	87.55	15.61	
3. Protestant	553	86.85	14.33	
4. Jewish	152	85.79	17.82	
5. Agnostic, Left blank, None	125	77.86	15.76	15.01**

* d.f. = 4/1384

** For d.f. = 4/1000, $F_{.05} = 2.38$, $F_{.01} = 3.34$

TABLE 32

Mean Differences on the F-Scale for American Subjects
Grouped by Religious Classifications

Religious Category	1	2	3	4	5
1. Mormon		11.36*	11.96*	14.71*	21.31*
2. Protestant			.60	3.36*	9.95*
3. Catholic				2.76*	9.35*
4. Jewish					6.59*
5. Agnostics, Left blank None					

* Significant at the .05 level, Duncan's New Multiple Range Test

TABLE 33

Mean Differences on the D-Scale for American Subjects
Grouped by Religious Classifications

Religious Category	1	2	3	4	5
1. Mormon		6.64*	7.49*	10.18*	16.98*
2. Protestant			.84	3.54	10.34*
3. Jewish				2.70	9.50*
4. Catholic					6.80*
5. Agnostics, Left blank None					

* Significant at the .05 level, Duncan's New Multiple Range Test

TABLE 34

Mean Differences on the R-Scale for American Subjects Grouped by Religious Classifications

Religious Category	1	2	3	4	5
1. Mormon		2.39	3.09*	4.15*	12.08*
2. Catholic			.69	1.76	9.69*
3. Protestant				1.07	8.99*
4. Jewish					7.92*
5. Agnostics, Left blank, None					

* Significant at the .05 level, Duncan's New Multiple Range Test

dogmatism of education students, and about the possible effects of time or subcultural variations on D and F scores. The differences between the means for Rokeach's religious groups and those for comparable religious groupings for this study, presented in Table 34a, suggest that college students in teacher education may, indeed, be less authoritarian and dogmatic than college students in general. Note also the fluctuations in Rokeach's means from one sample to the next, suggesting that much variability is due to the subculture (for example, of Catholics or Protestants) from which one draws his samples--a point to be emphasized in the next few paragraphs.

The comparison of the mean for the Mormon sample in this study against the mean for the pooled nonMormon samples (a comparison of interest to a researcher at a university with a predominantly Mormon studentbody) yielded F-Ratios for the F-Scale and D-Scale means (Table 35) which reflect the findings reported in Tables 31 through 34. However, there was not a significant difference on the R-Scale, and the magnitude of difference was not as great for the D-Scale as for the F-Scale. The same analysis, restricted to Utah State University students (Table 36), resulted in a significant difference ($P < .05$) for the F-Scale, but not for either the D- or R-Scales. The differences in results between Tables 35 and 36 makes it evident that where the researcher obtains his samples of religious groups is likely to have considerable impact on his findings.

Variability accompanying the locale of sampling is further illustrated by the analyses reported in Tables 37 through 46. For these analyses, subjects from different universities who indicated common religious affiliations were compared, using those university subgroups which were of sufficient

TABLE 34a

Means for Similar Religious Groupings in the Present Study and in *The Open and Closed Mind*

F-Scale Means*

Religious Group	Present Study	Rokeach Study 1	Rokeach Study 2
Catholic	3.04	3.79	3.63
Protestant	3.06	3.42	3.03
Jewish	2.94		3.26
Nonbeliever	2.71	3.16	3.23

* Converted to item means so that the 29 and the 28-item F-Scale scores would be comparable

D-Scale Means

Religious Group	Present Study	Rokeach Study 1	Rokeach Study 2
Catholic	136.00	191.1	147.4
Protestant	139.54	180.1	138.3
Jewish	138.70		139.5
Nonbeliever	129.26	174.6	147.2

size. Table 37 presents the analyses of variance for Jewish subjects from different institutions. In every instance, the F-Ratio is significant, with the F-Scale again producing the largest differences. While the Boston University and Ohio State University groups change positions from one analysis to the next, the Harvard group consistently has the lowest mean. The comparisons of pairs of means in Table 38 indicate considerable variability in pattern, with the significance of the Boston University-Harvard pairing the only consistency.

TABLE 35

Analyses of Variance for F-, D-, and R-Scale Means of American Subjects Grouped Mormon *vs.* Non-Mormon

F-Scale

	N	Mean	S.D.	F-Ratio*
Mormon	421	97.19	19.23	
Non-Mormon	984	83.99	20.81	123.88**

D-Scale

	N	Mean	S.D.	F-Ratio*
Mormon	421	146.18	22.72	
Non-Mormon	984	137.59	23.73	39.54**

R-Scale

	N	Mean	S.D.	F-Ratio*
Mormon	421	89.94	14.33	
Non-Mormon	984	85.57	16.36	2.26**

* d.f. = 1/1403

** For d.f. = 1/1000, $F_{.05} = 3.85$, $F_{.01} = 6.66$

TABLE 36

Analyses of Variance for F-, D-, and R-Scale Means of Utah State University Subjects Grouped Mormon *vs*. Non-Mormon

F-Scale

	N	Mean	S.D.	F-Ratio*
Mormon	419	97.21	19.21	
Non-Mormon	79	92.32	21.27	4.15**

D-Scale

	N	Mean	S.D.	F-Ratio*
Mormon	416	146.16	22.74	
Non-Mormon	83	142.16	22.56	2.05**

R-Scale

	N	Mean	S.D.	F-Ratio*
Mormon	416	89.91	14.34	
Non-Mormon	83	87.41	15.19	1.97**

* d.f. = 1/496

** For d.f. = 1/500, $F_{.05} = 3.86$, $F_{.01} = 6.69$

TABLE 37

Analyses of Variance for F-, D-, and R-Scale Means of Jewish Subjects Grouped by University

F-Scale

	N	Mean	S.D.	F-Ratio*
Boston	77	91.31	17.34	
Ohio State	28	83.93	18.20	
Harvard	33	61.30	14.18	36.04**

D-Scale

	N	Mean	S.D.	F-Ratio*
Ohio State	28	145.00	21.54	
Boston	77	142.81	22.95	
Harvard	33	122.48	20.89	11.52**

R-Scale

	N	Mean	S.D.	F-Ratio*
Boston	77	88.82	14.70	
Ohio State	28	83.86	17.40	
Harvard	33	78.42	23.29	4.04**

* d.f. = 2/135

** For d.f. = 2/125, $F_{.05} = 3.07$, $F_{.01} = 4.78$

TABLE 38

Mean Differences on the F-, D-, and R-Scales for Jewish Subjects Grouped by University

F-Scale

	1	2	3
1. Boston		7.38*	30.01*
2. Ohio State			22.62*
3. Harvard			

D-Scale

	1	2	3
1. Ohio State		2.20	22.52*
2. Boston			20.32*
3. Harvard			

R-Scale

	1	2	3
1. Boston		4.96	10.39*
2. Ohio State			5.43
3. Harvard			

* Significant at the .05 level, Duncan's New Multiple Range Test

The analyses of differences among Catholic subjects from different universities indicate significant differences ($P < .05$) on the F- and R-Scales (Tables 39, 40, and 41). However, it is evident from the comparisons of pairs of means (Tables 42 and 43) that the differences between two or three means have accounted for the significant F-Ratio in each case. It should also be noted that these analyses involved rather small numbers of subjects at some of the universities.

The results of comparing Methodists at different universities are presented in Table 44. There is a significant difference within only one set of means--for the R-Scale. The significantly higher mean of the Michigan sample as compared to the other two accounts for the significant among mean difference (Table 45).

The findings reported in Table 46 are those for Presbyterian subjects from three universities. None of the differences among the means are significant.

Two aspects of the data on differences among religious groups from different universities seem particularly striking. The first is that inter-university variability will differ greatly depending upon the personality scale being used and the religious group being sampled. Second, the researcher is likely to obtain quite different means for the same religion depending upon the university from which he draws his religious sample.

Elementary versus Secondary

Whether those students who go into secondary or elementary education differ from one another on seemingly important personality dimensions has long been of concern to teacher educators. As indicated in the review of literature, there are few findings bearing on possible differences in authoritarianism or dogmatism between elementary and secondary teacher education students, and the findings available are equivocal. The data which we gathered offered an excellent opportunity to test for elementary-secondary differences because the various religious faiths were distributed between both groups in the total sample. The results of analyzing mean differences on the F-, D-, and R-Scales are reported in Table 47. None of the differences approached significance.

Despite the fact that our "nationwide" sample did not reveal any significant differences between elementary and secondary teacher education students, further analyses seemed appropriate. Comparisons are frequently made between samples drawn from one university or geographical area, and it seemed of interest to determine whether a university-by-university analysis would turn up any significant differences.

The findings in Table 48 indicate a significant difference on the F-Scale between elementary and secondary education students at the University of California at Santa Barbara, with the difference between means on the Dogmatism Scale approaching significance. This is the only within university

TABLE 39

Analysis of Variance for F-Scale Means of Catholic Subjects Grouped by University

University	N	Mean	S.D.	F-Ratio*
1. Boston	15	97.13	22.58	
2. Oklahoma	10	93.40	14.77	
3. Utah State	9	92.33	11.51	
4. Michigan	17	85.65	22.04	
5. California	10	85.60	22.95	
6. Harvard	11	78.36	21.07	
7. Ohio State	43	76.44	19.40	2.75**

* d.f = 6/108
** For d.f. = 6/100, $F_{.05}$ = 2.19, $F_{.01}$ = 2.99

TABLE 40

Analysis of Variance for D-Scale Means of Catholic Subjects Grouped by University

University	N	Mean	S.D.	F-Ratio*
1. Utah State	9	149.44	19.68	
2. Oklahoma	10	145.00	19.20	
3. Boston	15	140.73	28.55	
4. California	10	135.10	23.30	
5. Michigan	17	134.71	22.84	
6. Harvard	11	132.00	23.82	
7. Ohio State	43	131.58	21.67	1.14**

* d.f. = 6/108
** For d.f. = 6/100, $F_{.05}$ = 2.19, $F_{.01}$ = 2.99

TABLE 41

Analysis of Variance for R-Scale Means of Catholic Subjects Grouped by University

University	N	Mean	S.D.	F-Ratio*
1. Oklahoma	10	100.60	10.80	
2. Utah State	9	94.00	17.18	
3. Boston	15	93.73	14.58	
4. Michigan	17	87.82	15.84	
5. California	10	86.50	11.42	
6. Ohio State	43	82.65	15.81	
7. Harvard	11	80.45	16.87	2.89**

* d.f. = 6/108

** For d.f. = 6/100, $F_{.05} = 2.19$, $F_{.01} = 2.99$

TABLE 42

Mean Differences on the F-Scale for Catholic Subjects Grouped by University

		1	2	3	4	5	6	7
Boston	1		3.73	4.80	11.49	11.53	18.77*	20.69*
Oklahoma	2			1.07	7.75	7.80	15.04	16.96*
Utah State	3				6.69	6.73	13.97	15.89
Michigan	4					.05	7.28	9.20
California	5						7.24	9.16
Harvard	6							1.92
Ohio State	7							

* Significant at the .05 level, Duncan's New Multiple Range Test

TABLE 43

Mean Differences of R-Scale Means for Catholic Subjects Grouped by University

		1	2	3	4	5	6	7
Oklahoma	1		6.60	6.87	12.78	14.10	17.95*	20.14*
Utah State	2			.27	6.18	7.50	11.34	13.55
Boston	3				5.91	7.23	11.08*	13.28
Michigan	4					1.32	5.17	7.37
California	5						3.85	6.05
Ohio State	6							2.20
Harvard	7							

* Significant at the .05 level, Duncan's New Multiple Range Test

comparison of elementary and secondary education students which revealed a significant difference (Tables 49 through 53), although the difference between F-Scale means did approach significance with the University of Michigan subjects (Table 49). It will be remembered from Table 14 that the University of Michigan sample is made up primarily of teachers who had completed their bachelor's work and were in post-graduate extension courses. It is doubtful, however, that level of graduate work would have an effect on these results, given the extremely low correlations between the three personality variables, age, and year in school (Table 17). For that reason, undergraduate and graduate students at Utah State University were initially pooled for the elementary versus secondary comparisons, and then, in order to obtain evidence as to the possible effect of including the graduate students, analyses were conducted with the graduate students excluded. The results (Table 54) are almost identical to those obtained with the pooled groups (Table 52).

In short, despite the contradictory finding with one university sample, there seems to be little basis for concluding that elementary and secondary teacher education students differ in their authoritarianism, dogmatism, or rigidity as measured by the three scales used in this study.

Teaching Major Comparisons

Are there factors operating which result in students with varying degrees of authoritarianism, dogmatism, or rigidity selecting different teaching majors?

TABLE 44

Analyses of Variance for Means of Methodist Subjects Grouped by University

F-Scale

University	N	Mean	S.D.	F-Ratio*
Oklahoma	25	92.20	24.70	
Ohio State	74	85.14	17.61	
Michigan	20	83.50	22.45	1.35**

D-Scale

University	N	Mean	S.D.	F-Ratio*
Ohio State	74	143.44	20.79	
Oklahoma	25	140.96	32.76	
Michigan	20	135.40	28.46	.80**

R-Scale

University	N	Mean	S.D.	F-Ratio*
Michigan	20	97.95	16.65	
Oklahoma	25	88.92	15.66	
Ohio State	74	85.91	13.38	5.32**

* d.f. = 2/116

** For d.f. = 2/100, $F_{.05} = 3.09$, $F_{.01} = 4.82$

TABLE 45

Mean Differences of R-Scale Means for Methodist Subjects Grouped by University

	1	2	3
1. Michigan		9.03*	12.04*
2. Oklahoma			3.01
3. Ohio State			

* Significant at the .05 level, Duncan's New Multiple Range Test

Or, to ask a question from the other side of the same coin: Is the teaching major of the researcher's subjects likely to affect the mean F-, D-, or R-Scale values obtained? Tables 55, 56, and 57 indicate that, for all three scales, there were significant differences among secondary school teaching major subgroups in this study's "nationwide" sample. Educators concerned with different curricular areas will be interested in the relative positions of "their" teaching majors and in the differences between pairs of means as reported in Tables 58, 59, and 60. To the senior investigator, with his interest in social studies education, it was interesting to note the consistent position of the social studies majors toward the bottom of the rankings.

In interpreting these results, it is particularly important to keep in mind the effects that subcultural variations might have on results. For example, a look back at Table 15 indicates that a majority of the students in the teaching majors with the five highest F-Scale means, as reported in Table 55, were from Utah State University. With the large proportion of Mormons in the U.S.U. studentbody, and with the relatively high F-Scale mean of Mormons (Table 25), it is not surprising that teaching major groups dominated by Utah State University students would have higher F-Scale means. One can only wonder how often the reported mean differences attributed to one basis of classification have, in fact, reflected some other underlying group characteristic.

Of course, the reverse argument could be made. That is, it might be argued that the Mormon group had a higher mean as compared to other religious groups because the U.S.U. sample was dominated by subjects with certain teaching majors. This argument has two weaknesses: (1) While all of the Mormons in the sample were from Utah State University, no teaching major subgroup came exclusively from that institution. Moreover, despite the fact that several teaching major subgroups are predominantly Mormon, these subgroups do not dominate the U.S.U. sample. Therefore, teaching major does not seem to account for the relatively high mean for the total

TABLE 46

Analyses of Variance for Means of Presbyterian Subjects Grouped by University

F-Scale

University	N	Mean	S.D.	F-Ratio*
Ohio State	36	87.83	17.60	
Oklahoma	19	87.68	19.70	
Michigan	15	86.73	19.71	.018**

D-Scale

University	N	Mean	S.D.	F-Ratio*
Ohio State	36	140.86	21.31	
Oklahoma	19	141.68	21.88	
Michigan	15	135.40	22.01	.41**

R-Scale

University	N	Mean	S.D.	F-Ratio*
Ohio State	36	89.89	14.35	
Oklahoma	19	91.79	13.34	
Michigan	15	86.13	16.92	.61**

* d.f. = 2/66

** For d.f. = 2/70, $F_{.05} = 3.13$, $F_{.01} = 4.92$

TABLE 47

Analyses of Variance for F-, D-, and R-Scale Means of American Subjects Grouped Elementary versus Secondary

F-Scale

	N	Mean	S.D.	F-Ratio*
Elementary	489	88.38	20.88	
Secondary	687	87.64	21.43	.35**

D-Scale

	N	Mean	S.D.	F-Ratio*
Elementary	489	140.60	24.08	
Secondary	687	140.21	23.48	.057**

R-Scale

	N	Mean	S.D.	F-Ratio*
Elementary	489	86.74	15.26	
Secondary	687	86.86	16.41	.016**

* d.f. = 1/1174

** For d.f. = 1/∞, $F_{.05} = 3.84$, $F_{.01} = 6.64$

TABLE 48

Analyses of Variance for F-, D-, and R-Scale Means of University of California at Santa Barbara Subjects Grouped Elementary versus Secondary

F-Scale

	N	Mean	S.D.	F-Ratio*
Elementary	47	82.96	15.53	
Secondary	18	73.61	16.97	4.33**

D-Scale

	N	Mean	S.D.	F-Ratio*
Elementary	47	137.49	21.00	
Secondary	18	126.17	18.05	3.95**

R-Scale

	N	Mean	S.D.	F-Ratio*
Elementary	47	84.76	13.08	
Secondary	18	78.50	14.38	2.74**

* d.f. = 1/63

** For d.f. = 1/60, $F_{.05} = 4.00$, $F_{.01} = 7.08$

TABLE 49

Analyses of Variance for F-, D-, and R-Scale Means of University of Michigan Subjects Grouped
Elementary versus Secondary

F-Scale

	N	Mean	S.D.	F-Ratio*
Elementary	62	80.61	20.99	
Secondary	19	91.42	19.76	3.86**

D-Scale

	N	Mean	S.D.	F-Ratio*
Elementary	62	130.89	23.78	
Secondary	19	139.68	23.14	1.96**

R-Scale

	N	Mean	S.D.	F-Ratio*
Elementary	62	87.76	16.29	
Secondary	19	91.79	17.95	.83**

* d.f. = 1/79

** For d.f. = 1/80, $F_{.05} = 3.96$, $F_{.01} = 6.96$

TABLE 50

Analyses of Variance for F-, D-, and R-Scale Means of Harvard Subjects Grouped Elementary versus Secondary

F-Scale

	N	Mean	S.D.	F-Ratio*
Elementary	34	67.65	17.37	
Secondary	74	70.01	18.41	.391**

D-Scale

	N	Mean	S.D.	F-Ratio*
Elementary	34	127.47	22.50	
Secondary	74	126.05	24.20	.082**

R-Scale

	N	Mean	S.D.	F-Ratio*
Elementary	34	75.20	17.08	
Secondary	74	79.43	19.44	1.16**

* d.f. = 1/106

** For d.f. = 1/125, $F_{.05} = 3.92$, $F_{.01} = 6.84$

TABLE 51

Analyses of Variance for F-, D-, and R-Scale Means of University of Oklahoma Subjects Grouped Elementary Versus Secondary

F-Scale

	N	Mean	S.D.	F-Ratio*
Elementary	28	87.96	21.27	
Secondary	90	91.40	20.79	.57**

D-Scale

	N	Mean	S.D.	F-Ratio*
Elementary	28	136.64	30.15	
Secondary	90	143.72	21.25	1.88**

R-Scale

	N	Mean	S.D.	F-Ratio*
Elementary	28	91.75	14.80	
Secondary	90	91.34	16.02	.014**

* d.f. = 1/116

** For d.f. = 1/125, $F_{.05} = 3.92$, $F_{.01} = 6.84$

TABLE 52

Analyses of Variance for F-, D-, and R-Scale Means of Ohio State University Subjects Grouped Elementary Versus Secondary

F-Scale

	N	Mean	S.D.	F-Ratio*
Elementary	109	86.18	17.60	
Secondary	182	82.77	19.91	2.16**

D-Scale

	N	Mean	S.D.	F-Ratio*
Elementary	109	143.47	21.86	
Secondary	182	139.58	22.58	2.05**

R-Scale

	N	Mean	S.D.	F-Ratio*
Elementary	109	84.82	15.01	
Secondary	182	84.46	15.88	.037**

* d.f. = 1/289

** For d.f. = 1/300, $F_{.05} = 3.87$, $F_{.01} = 6.72$

TABLE 53

Analyses of Variance for F-, D-, and R-Scale Means of Utah State University Subjects Grouped Elementary Versus Secondary

F-Scale

	N	Mean	S.D.	F-Ratio*
Elementary	207	96.59	19.92	
Secondary	277	95.94	19.39	.127**

D-Scale

	N	Mean	S.D.	F-Ratio*
Elementary	207	145.41	23.43	
Secondary	277	145.30	22.48	.002**

R-Scale

	N	Mean	S.D.	F-Ratio*
Elementary	207	89.32	14.01	
Secondary	277	89.40	14.95	.00**

* d.f. = 1/482

** For d.f. = 1/500, $F_{.05} = 3.86$, $F_{.01} = 6.69$

TABLE 54

Analyses of Variance for F-, D-, and R-Scale Means of Utah State University Subjects Grouped Elementary Versus Secondary, Graduate Students Excluded

F-Scale

	N	Mean	S.D.	F-Ratio*
Elementary	151	97.39	19.21	
Secondary	233	96.52	19.35	.18**

D-Scale

	N	Mean	S.D.	F-Ratio*
Elementary	151	146.65	23.61	
Secondary	233	146.43	23.02	.007**

R-Scale

	N	Mean	S.D.	F-Ratio*
Elementary	151	88.82	13.72	
Secondary	233	88.89	14.73	.00**

* d.f. = 1/382

* For d.f. = 1/400, $F_{.05} = 3.86$, $F_{.01} = 6.70$

TABLE 55

Analysis of Variance for F-Scale Means of American Subjects Grouped by Secondary School Teaching Majors

Major	N	Mean	S.D.	F-Ratio*
1. Voc., Tech., and Agri. Education	13	102.77	16.05	
2. Business Educ.	47	100.30	19.49	
3. Physical Educ.	53	98.49	19.19	
4. Special Educ. & Remed. Reading	5	93.00	23.52	
5. Speech	27	92.92	21.36	
6. Music	18	92.83	24.89	
7. Languages	24	92.42	22.39	
8. Mathematics	46	92.22	18.12	
9. Art	22	91.86	19.48	
10. Science	79	86.37	20.76	
11. Home Econ.	30	86.03	18.12	
12. Social Studies	160	80.89	20.50	
13. English	132	80.63	20.76	6.78**

* d.f. = 12/643

** For d.f. = 12/500, $F_{.05} = 1.77$, $F_{.01} = 2.22$

TABLE 56

Analysis of Variance for D-Scale Means of American Subjects Grouped by Secondary School Teaching Majors

Major	N	Mean	S.D.	F-Ratio*
1. Languages	24	151.46	24.11	
2. Business Educ.	47	148.45	19.49	
3. Music	18	148.44	28.96	
4. Mathematics	46	147.63	18.12	
5. Vocational Educ.	13	146.69	26.49	
6. Physical Educ.	53	145.02	19.19	
7. Art	22	143.86	25.93	
8. Speech	27	143.67	22.54	
9. Science	79	141.35	25.67	
10. Home Econ.	30	137.30	22.76	
11. Social Studies	160	135.19	20.05	
12. English	132	134.67	24.80	
13. Special Educ. & Remed. Reading	5	132.60	33.03	3.13**

* d.f. = 12/643

** For d.f. = 12/500, $F_{.05} = 1.77$, $F_{.01} = 2.22$

TABLE 57

Analysis of Variance for R-Scale Means of American Subjects Grouped by Secondary School Teaching Majors

Major	N	Mean	S.D.	F-Ratio*
1. Business Educ.	47	95.85	14.05	
2. Music	18	94.78	13.34	
3. Vocational Educ.	13	92.31	12.09	
4. Mathematics	46	92.02	11.69	
5. Physical Educ.	53	91.89	12.74	
6. Home Econ.	30	89.77	14.53	
7. Art	22	88.36	13.88	
8. Languages	24	86.33	18.21	
9. Science	79	86.04	15.31	
10. Speech	27	84.48	16.18	
11. Special Educ. & Remed. Reading	5	84.00	13.14	
12. Social Studies	160	83.83	17.24	
13. English	132	82.11	17.35	3.41**

* d.f. = 12/643

** For d.f. = 12/500, $F_{.05} = 1.77$, $F_{.01} = 2.22$

TABLE 58

Mean Differences on the F-Scale for American Subjects Grouped by Secondary School Teaching Majors

		1	2	3	4	5	6	7	8	9	10	11	12	13
Vocational Educ.	1		2.47	4.28	9.77	9.84	9.94	10.35	10.55	10.91	16.40*	16.74*	21.88*	22.14*
Business Educ.	2			1.81	7.30	7.37	7.46	7.88	8.08	8.43	13.93*	14.26*	19.41*	19.67*
Physical Educ.	3				5.49	5.56	5.66	6.07	6.27	6.63	12.12*	12.46*	17.60*	17.86*
Special Educ. & Remed. Reading	4					.08	.17	.58	.78	1.14	6.63	6.97	12.11	12.37
Speech	5						9.20	.51	.71	1.06	6.56	6.89	12.04*	12.30*
Music	6							.42	.62	.97	6.47	6.80	11.95*	12.20*
Languages	7								.20	.55	6.05	6.38	11.53*	11.79*
Mathematics	8									.35	5.85	6.18	11.33*	11.59*
Art	9										5.50	5.83	10.98*	11.24*
Science	10											.33	5.48	5.74
Home Econ.	11												5.15	5.40
Social Studies	12													.26
English	13													

* Significant at the .05 level, Duncan's New Multiple Range Test

TABLE 59

Mean Differences on the D-Scale for American Subjects Grouped by Secondary School Teaching Majors

		1	2	3	4	5	6	7	8	9	10	11	12	13
Languages	1		3.01	3.01	3.83	4.77	6.44	7.60	7.79	10.10	14.16	16.27*	16.78*	18.86
Business Educ.	2			.002	.82	1.75	3.43	4.58	4.78	7.09	11.15	13.26*	13.27*	15.85
Music	3				.81	1.75	3.43	4.58	4.78	7.09	11.14	13.26*	13.77*	15.84
Math	4					.94	2.61	3.77	3.96	6.28	10.33	12.44*	12.96*	15.03
Vocational Educ.	5						1.67	2.83	3.03	5.34	9.39	11.50	12.02	14.09
Physical Educ.	6							1.16	1.35	3.66	7.72	9.83*	10.34*	12.42
Art	7								.20	2.51	6.56	8.68	9.19	11.26
Speech	8									2.31	6.37	8.48	8.99	11.07
Science	9										4.06	6.17	6.68	8.76
Home Econ.	10											2.11	2.62	4.70
Social Studies	11												5.13	2.59
English	12													2.08
Special Educ. & Remed. Reading	13													

* Significant at the .05 level, Duncan's New Multiple Range Test

TABLE 60

Mean Differences on the R-Scale for American Subjects
Grouped by Secondary School Teaching Majors

		1	2	3	4	5	6	7	8	9	10	11	12	13
Business Educ.	1		1.07	3.54	3.83	3.96	6.08	7.49	9.52*	9.81*	11.37*	11.85	12.02*	13.74*
Music	2			2.47	2.76	2.89	5.01	6.41	8.44	8.74	10.30	10.78	10.95*	12.66*
Vocational Educ.	3				.29	.42	2.54	3.94	5.97	6.27	7.83	8.31	8.48	10.19
Mathematics	4					.14	2.26	3.66	5.69	5.98	7.54	8.02	8.19*	9.91*
Physical Educ.	5						2.12	3.52	5.55	5.85	7.40	7.89	8.06*	9.77*
Home Econ.	6							1.40	3.43	3.73	5.28	5.77	5.94	7.65*
Art	7								2.03	2.83	3.88	4.36	4.53	6.25
Languages	8									.30	1.85	2.33	2.50	4.22
Science	9										1.56	2.04	2.21	3.92
Speech	10											.48	.65	2.37
Special Educ. & Remed. Reading	11												.17	1.89
Social Studies	12													1.72
English	13													

* Significant at the .05 level, Duncan's New Multiple Range Test

U.S.U. sample. (2) There are theoretical and empirical (i.e., previous research) reasons for expecting a conservative religious group to have high F-Scale scores, but no theoretical or empirical reasons to expect differential F-Scale means among the four teaching majors principally involved (vocational, technical, and agricultural education; business education; physical education; speech). Although the matter must remain open to question, it seems more reasonable to interpret religious affiliation as influencing teaching major mean values rather than vice versa.

One other note should be made of the value of having mean values for different subcultures available. The F-Scale mean for the total social studies sample (Table 55) was 80.89, while the means for the three social studies groups involved in the methods course investigation reported in previous chapters were 88.58, 100.03, and 88.00. An inspection of D-Scale means indicates a mean of 135.19 for the total social studies sample (Table 56) as compared to dogmatism means of 149.74, 145.70, and 143.56 for the three methods course groups. Finally, the total social studies group had a mean of 83.83 on the R-Scale (Table 57) as compared to means of 85.21, 92.16, and 87.68 for the students in the methods courses. Whether or not the differences are statistically significant is not the point here. As Uhes (1968) pointed out in attempting to interpret relationships between dogmatism and measures of divergent and convergent thinking with a sample of predominantly Mormon high school students, because the mean D score of a Mormon sample is often close to the mean of "high" groups in other research, correlational studies in particular are affected. He noted in particular (p. 69) that an apparently curvilinear relationship between dogmatism and creativity in his study might be linear with a sample which had a lower level of dogmatism. It is difficult, if not impossible at this point, to know what effect Mormon samples might have had on the results obtained in the methods course investigation. However, knowing that Mormons tend to score higher than many religious groups on the F-, D-, and R-Scales, one would not be surprised (aside from all the other possible fluctuations from one study to another, such as differences in teacher behavior) if other studies using different subcultural samples produced different results.

Although no attempt will be made to discuss all of the differences between pairs of means for the teaching major subgroups (Tables 58, 59, and 60), one other point should be mentioned. The results of the Multiple Range Test indicate that the significant F-Ratios for the three scales are largely the result of differences between the means at the upper and lower ends of rankings. In the middle of the rankings, the means are not only similar in value, but lacking in significant differences.

Analyses of mean differences among subject matter majors were also carried out by university to provide information about the variability in results from one sample to another. The intra-university analyses will not commonly contain all of the groups present in the total analyses because of the lack of adequate numbers. Moreover, although the analysis with all university samples pooled was carried out only on secondary education students, elementary education students who indicated subject majors were included in the individual university analysis. This was done to bolster the subgroup sizes, and seemed justified in the light of the generally insignificant differences between elementary and secondary education students (Tables 47 through 54).

Table 61 presents the results of the analysis for the Harvard sample, comparing social studies and English majors (nine science majors were not included in the analysis). Although the social studies group mean is higher in all three cases, the difference is significant only for the Dogmatism Scale.

There was also one significant difference among means for the University of Oklahoma sample (Tables 62, 63, and 64), but this time it was for the R-Scale. The significant F seemed to be due primarily to the high score of business education majors (see Table 65 for the comparisons of pairs of means). This result might suggest caution in accepting the earlier argument that the higher mean value for business education majors as compared to the other majors for the total sample was due to religious affiliation, with a high proportion of business education majors from Utah State University. Instead, however, it strengthens the argument and provides further reason for urging caution in interpreting results with samples drawn from different religious faiths. Table 15 indicates that, along with Utah State University, the University of Oklahoma was a major source of business education majors. (The two schools account for 87 % of the business education majors.) Twenty-one out of 44 Baptists come from the University of Oklahoma (Table 16), and Baptists had the highest mean on the R-Scale (Table 29), with Mormons third. While the reasoning may be tenuous, there seems to be a fair basis for attributing the higher business education mean on the R-Scale to the combined Mormon-Baptist numbers in that group.

Tables 66, 67, and 68 present the analyses of variance for the Ohio State University teaching majors. None of the differences among means were significant.

There was one significant F-Ratio for the Utah State University analyses (Tables 69, 70, and 71)--for the Dogmatism Scale. The differences between pairs of means are reported in Table 72. The mean differences between the music and science groups at the top of the rankings and home economics majors at the bottom account for the significant differences among means.

When graduate students were excluded from the Utah State University sample, slightly different results were obtained (Tables 73, 74, and 75). The difference among means is still significant for the D-Scale, but the F-Ratio is also significant (even if barely so) for the F-Scale. Table 76 reveals that the differences between the social studies mean and those of the seven highest groups account for the significant variability in means on the F-Scale. Basically the same pattern holds for the Dogmatism Scale means (Table 77).

It is clear from the analyses that different F-, D-, and R-Scale means can be expected among education students with different subject majors, but the scales for which there are significant differences, the rank ordering of the means, and the pairs of means which are significantly different from one another will vary from university to university. Any interpretation of such differences is likely to be difficult because of the confounding of religious and teaching major groupings. Moreover, the lack of consistently significant teaching major differences within the university samples after a finding of significant differences among teaching major groups on all three scales for the total sample does substantiate the probable impact of subcultural variations. With the total sample, different teaching majors were dominated by different religious subgroups when coming heavily from one or two universities; within each university sample, the distribution of religious faiths among the different teaching majors was undoubtedly more equal.

TABLE 61

Analyses of Variance for F-, D-, and R-Scale Means of Harvard English Majors and Harvard Social Studies Majors

F-Scale

Major	N	Mean	S.D.	F-Ratio*
English	36	67.53	18.32	
Social Studies	30	71.17	17.92	.64

D-Scale

Major	N	Mean	S.D.	F-Ratio*
English	36	120.89	24.74	
Social Studies	30	134.33	21.07	5.35**

R-Scale

Major	N	Mean	S.D.	F-Ratio*
English	36	77.50	17.09	
Social Studies	30	82.17	22.88	.87**

* d.f. = 1/64

** For d.f. = 1/60, $F_{.05} = 4.00$, $F_{.01} = 7.08$

TABLE 62

Analysis of Variance for F-Scale Means of University of Oklahoma Subjects Grouped by Teaching Major

Major	N	Mean	S.D.	F-Ratio*
1. Business Educ.	11	103.00	16.57	
2. Social Studies	14	98.28	22.30	
3. Languages	14	96.43	20.79	
4. Speech	7	94.43	24.74	
5. Home Econ.	10	90.10	17.31	
6. Mathematics	10	87.90	19.21	
7. Science	12	84.67	20.05	1.04**

* d.f. = 6/71
** For d.f. = 6/70, $F_{.05} = 2.23$, $F_{.01} = 3.07$

TABLE 63

Analysis of Variance for D-Scale Means of University of Oklahoma Subjects Grouped by Teaching Major

Major	N	Mean	S.D.	F-Ratio*
1. Languages	14	154.78	18.04	
2. Speech	7	153.43	19.96	
3. Mathematics	10	147.10	18.08	
4. Business Educ.	11	146.91	15.84	
5. Social Studies	14	141.64	25.00	
6. Science	12	139.08	24.38	
7. Home Econ.	10	138.40	24.09	.97**

* d.f. = 6/71
** For d.f. = 6/70, $F_{.05} = 2.23$, $F_{.01} = 3.07$

TABLE 64

Analysis of Variance for R-Scale Means of University of Oklahoma Subjects Grouped by Teaching Major

Major	N	Mean	S.D.	F-Ratio*
1. Business Educ.	11	106.82	16.32	
2. Mathematics	10	96.60	6.94	
3. Home Econ.	10	93.70	11.18	
4. Social Studies	14	89.78	12.29	
5. Languages	14	89.14	17.58	
6. Science	12	87.83	18.94	
7. Speech	7	81.86	13.46	2.66**

* d.f. = 6/71
** For d.f. = 6/70, $F_{.05} = 2.23$, $F_{.01} = 3.07$

TABLE 65

Mean Differences on the R-Scale for University of Oklahoma Subjects Grouped by Teaching Major

	1	2	3	4	5	6	7
1. Business Educ.		10.22	13.12	17.03*	17.68*	18.98*	24.96*
2. Mathematics			2.90	6.81	7.46	8.77	14.74
3. Home Econ.				3.91	4.56	5.87	11.84
4. Social Studies					.64	1.95	7.93
5. Languages						1.31	7.28
6. Science							5.98
7. Speech							

* Significant at the .05 level, Duncan's New Multiple Range Test

TABLE 66

Analysis of Variance for F-Scale Means of Ohio State University Subjects Grouped by Teaching Major

Major	N	Mean	S.D.	F-Ratio*
1. Music	22	89.14	25.41	
2. Home Econ.	11	87.54	16.34	
3. Mathematics	14	85.21	21.97	
4. Physical Educ.	13	84.31	25.92	
5. English	33	81.03	18.00	
6. Science	35	80.34	17.79	
7. Social Studies	49	78.55	18.53	
8. Special Educ.	10	71.10	19.76	1.20**

* d.f. = 7/179

** For d.f. = 8/200, $F_{.05}$ = 1.98, $F_{.01}$ = 2.60

TABLE 67

Analysis of Variance for D-Scale Means of Ohio State University Subjects Grouped by Teaching Major

Major	N	Mean	S.D.	F-Ratio*
1. Home Econ.	11	147.09	18.94	
2. Mathematics	14	144.57	21.62	
3. Music	22	143.82	30.02	
4. English	33	143.73	20.35	
5. Science	35	138.42	21.73	
6. Social Studies	49	136.67	18.68	
7. Physical Educ.	13	136.00	22.00	
8. Special Educ.	10	124.00	28.93	1.47**

* d.f. = 8/184

** For d.f. = 8/200, $F_{.05}$ = 1.98, $F_{.01}$ = 2.60

TABLE 68

Analysis of Variance for R-Scale Means of Ohio State University Subjects Grouped by Teaching Majors

Major	N	Mean	S.D.	F-Ratio*
1. Home Econ.	11	91.00	13.48	
2. Music	22	89.45	16.17	
3. Mathematics	14	88.71	14.00	
4. Physical Educ.	13	87.69	12.26	
5. Science	35	84.48	12.14	
6. Special Educ.	10	83.40	18.61	
7. Social Studies	49	83.24	16.87	
8. English	33	81.82	17.54	.93**

* d.f. = 8/184

** For d.f. = 8/200, $F_{.05} = 1.98$, $F_{.01} = 2.60$

TABLE 69

Analysis of Variance for F-Scale Means of Utah State University Subjects Grouped by Teaching Majors

Major	N	Mean	S.D.	F-Ratio*
1. Voc., Tech., & Indust., & Agric. Educ.	11	105.00	14.55	
2. Business Educ.	30	101.10	19.96	
3. Languages	12	100.75	21.23	
4. Physical Educ.	42	98.76	17.89	
5. Science	31	98.74	20.78	
6. Music	8	98.38	18.89	
7. Mathematics	23	98.09	11.82	
8. Speech	15	94.40	20.99	
9. Art	19	94.05	17.70	
10. English	52	91.86	18.47	
11. Social Studies	52	90.71	18.48	
12. Home Econ.	9	85.33	24.03	1.53**

* d.f. = 11/294

** For d.f. = 12/300, $F_{.05} = 1.79$, $F_{.01} = 2.24$

TABLE 70

Analysis of Variance for D-Scale Means of Utah State University Subjects Grouped by Teaching Majors

Major	N	Mean	S.D.	F-Ratio*
1. Music	8	154.88	19.75	
2. Science	31	153.84	24.90	
3. Art	19	152.63	22.84	
4. Mathematics	23	150.00	14.74	
5. Business Educ.	30	149.37	21.17	
6. Languages	12	149.08	26.62	
7. Voc., Tech., & Indust., & Agric. Educ.	11	146.73	26.15	
8. Physical Educ.	42	145.31	18.48	
9. Speech	15	144.27	22.17	
10. Social Studies	52	141.17	19.93	
11. English	52	141.15	24.07	
12. Home Econ.	9	125.67	19.24	1.94**

* d.f. = 11/294

** For d.f. = 12/300, $F_{.05} = 1.79$, $F_{.01} = 2.24$

TABLE 71

Analysis of Variance for R-Scale Means of Utah State University Subjects Grouped by Teaching Majors

Major	N	Mean	S.D.	F-Ratio*
1. Business Educ.	30	93.20	11.50	
2. Music	8	92.38	10.98	
3. Mathematics	23	92.35	9.86	
4. Voc., Tech., & Indust., & Agri. Educ.	11	92.18	10.76	
5. Languages	12	91.17	8.09	
6. Physical Educ.	42	90.81	12.69	
7. Art	19	90.10	13.61	
8. Science	31	89.94	15.60	
9. Social Studies	52	89.27	16.58	
10. Speech	15	88.40	18.31	
11. Home Econ.	9	85.89	18.48	
12. English	52	84.60	16.94	.93**

* d.f. = 11/294

** For d.f. = 12/300, $F_{.05}$ = 1.79, $F_{.01}$ = 2.24

TABLE 72

Mean Differences on the D-Scale for Utah State University Subjects Grouped by Teaching Major

	1	2	3	4	5	6	7	8	9	10	11	12
1. Music		1.04	2.24	4.88	5.51	5.79	8.15	9.57	10.61	13.70	13.72	29.21*
2. Science			1.21	3.84	4.47	4.76	7.11	8.53	9.57	12.66*	12.68*	28.17*
3. Art				2.63	3.26	3.55	5.90	7.32	8.36	11.45	11.48	26.96*
4. Mathematics					.63	.92	3.27	4.69	5.73	8.83	8.85	24.33*
5. Business Educ.						.28	2.64	4.06	5.10	8.19	8.21	23.70*
6. Languages							2.36	3.77	4.82	7.91	7.93	23.42*
7. Voc., Tech., & Indust. & Agri. Educ.								1.42	2.46	5.55	5.57	21.06
8. Physical Educ.									1.04	4.14	4.16	19.64*
9. Speech										3.09	3.11	18.60
10. Social Studies											.02	15.51
11. English												15.48
12. Home Econ.												

* Significant at the .05 level, Duncan's New Multiple Range Test

TABLE 73

Analysis of Variance for F-Scale Means of Utah State University Subjects Grouped by Teaching Major, Graduate Students Excluded

Major	N	Mean	S.D.	F-Ratio*
1. Vocational Educ.	7	110.71	14.08	
2. Business Educ.	29	101.90	19.82	
3. Music	6	101.17	19.48	
4. Languages	12	100.75	21.23	
5. Science	30	99.77	20.34	
6. Mathematics	17	99.59	12.46	
7. Physical Educ.	40	98.58	18.03	
8. Speech	15	94.40	20.99	
9. Art	18	93.28	17.87	
10. English	46	91.56	16.99	
11. Home Econ.	8	89.12	22.81	
12. Social Studies	37	88.35	18.32	1.89**

* d.f. = 11/253

** For d.f. = 11/200, $F_{.05} = 1.84$, $F_{.01} = 2.34$

TABLE 74

Analysis of Variance for D-Scale Means of Utah State University Subjects Grouped by Teaching Major, Graduate Students Excluded

Major	N	Mean	S.D.	F-Ratio*
1. Vocational Educ.	7	160.57	22.45	
2. Music	6	157.33	21.72	
3. Science	30	154.20	25.23	
4. Art	18	152.11	23.45	
5. Business Educ.	29	150.72	20.21	
6. Mathematics	17	150.71	15.82	
7. Languages	12	149.08	26.62	
8. Physical Educ.	40	145.35	18.93	
9. Speech	15	144.27	22.17	
10. Social Studies	37	141.59	21.40	
11. English	46	139.04	23.07	
12. Home Econ.	8	127.00	20.01	2.16**

* d.f. = 11/253

** For d.f. = 11/200, $F_{.05} = 1.84$, $F_{.01} = 2.34$

TABLE 75

Analysis of Variance for R-Scale Means of Utah State University Subjects Grouped by Teaching Major, Graduate Students Excluded

Major	N	Mean	S.D.	F-Ratio*
1. Business Educ.	29	93.10	11.69	
2. Vocational Educ.	7	92.00	13.18	
3. Languages	12	91.17	8.09	
4. Music	6	91.00	11.36	
5. Art	18	90.78	13.67	
6. Science	30	90.63	15.37	
7. Physical Educ.	40	90.32	12.81	
8. Mathematics	17	89.76	9.01	
9. Speech	15	88.40	18.31	
10. Home Econ.	8	87.75	18.79	
11. Social Studies	37	86.27	15.49	
12. English	46	83.91	16.87	.96**

* d.f. = 11/253

** For d.f. = 11/200, $F_{.05} = 1.84$, $F_{.01} = 2.34$

TABLE 76

Mean Differences on the F-Scale for Utah State University Subjects Grouped by Teaching Majors, Graduate Students Excluded

	1	2	3	4	5	6	7	8	9	10	11	12
1. Vocational Educ.		8.82	9.55	9.96	10.95	11.13	12.14	16.32	17.44	19.16*	21.59	22.36*
2. Business Educ.			.73	1.15	2,13	2.31	3.32	7.50	8.62	10.34	12.77	13.54*
3. Music				.42	1.40	1.58	2.59	6.77	7.89	9.61	12.04	12.82
4. Languages					.98	1.16	2.18	6.35	7.47	9.20	11.62	12.40
5. Science						.18	1.19	5.37	6.49	8.21	10.64	11.42*
6. Mathematics							1.01	5.19	6.31	8.03	10.46	11.24
7. Physical Educ.								4.18	5.30	7.02	9.45	10.22*
8. Speech									1.12	2.84	5.27	6.05
9. Art										1.72	4.15	4.93
10. English											2.43	3.20
11. Home Econ.												7.74
12. Social Studies												

* Significant at the .05 level, Duncan's New Multiple Range Test

TABLE 77

Mean Differences on the D-Scale for Utah State University Subjects Grouped by Teaching Majors, Graduate Students Excluded

	1	2	3	4	5	6	7	8	9	10	11	12
1. Vocational Educ.		3.24	6.37	8.46	9.85	9.87	11.49	15.22	16.30	18.98	21.53*	33.57*
2. Music			3.13	5.22	6.61	6.63	8.25	11.98	13.07	15.74	18.29	30.33*
3. Science				2.09	3.48	3.49	5.12	8.85	9.93	12.60*	15.16*	27.20*
4. Art					1.39	1.41	3.03	6.76	7.84	10.52	13.07	25.11*
5. Business Educ.						.02	1.64	5.38	6.46	9.13	11.68	23.72*
6. Mathematics							1.62	5.36	6.44	9.11	11.66	23.70*
7. Languages								3.73	4.82	7.49	10.04	22.08
8. Physical Educ.									1.08	3.76	6.30	18.35
9. Speech										2.67	5.22	17.27
10. Social Studies											2.55	14.59
11. English												12.04
12. Home Econ.												

* Significant at the .05 level, Duncan's New Multiple Range Test

VI: A COMPARISON OF AMERICAN AND GERMAN TEACHER EDUCATION STUDENTS

Common stereotypes would have it that Germans are an authoritarian lot. Undoubtedly, the stereotype has its foundations in what appears, historically, to be a willingness to submit to authoritarian rule, or as Fromm (1941) has put it, to "escape from freedom." As already noted in the review of literature, there is also a slight basis in psychological research for the stereotype. Cohn and Carsch (1954) found German workers to have a higher mean F-Scale score than that for any other group reported to that time. Does the stereotype hold for German teacher education students, at least to the extent that they will have higher mean F-Scale scores than American teacher education students? The next part of this report deals with the answer to that question. It will also present comparisons of German and American students on the D- and R-Scales. Data crossing the American and German cultures have not previously been reported for those scales.

The Subjects

The sampling of students for this part of the study was again based largely on convenience, relying as it did upon the German university faculty acquaintances of a colleague of the senior investigator at Utah State University. During a visit to Heidelberg, Dr. Helmut Hofmann arranged for the administration of tests at the Heidelberg Pedagogical Academy, the University of Heidelberg, and the Bonn Pedagogical Academy. Students enrolled in these three institutions have completed the equivalent of fourteen years of American elementary and secondary schooling, and have passed the Abitur Examination which is a prerequisite to enrollment in German higher education institutions. Those in the Pedagogical Academies are enrolled in a two-year program of teacher preparation leading to a degree comparable to our bachelor's. The University of Heidelberg students are in a four-year program leading to a more advanced degree.

As with the American samples, it was requested that students near the end of their teacher education programs be tested, although with the different pattern of education it did not make sense to classify the German students as juniors or seniors. Samples of 98, 12, and 62 subjects were obtained from the Heidelberg Academy, the University of Heidelberg, and the Bonn Academy, respectively. The numbers of males and females by institution are presented in Table 78. As with the American sample, there are more females than males. And, again in common with the American sample, there are more elementary than secondary students (Table 79). The data in Table 80 indicate only two major religious groupings among the Germans sampled; on the whole the subjects were either Catholic or Protestant-Lutheran, with a few leaving the space for religion blank.

The Data

The same battery of tests was used as for the study of American college students in teacher education--the 28-item F-Scale, the Dogmatism Scale, and the Gough-Sanford Rigidity Scale. Through a grant from the Utah State University Research Council, the tests were initially translated into

TABLE 78

Sex of German Subjects

University	Male	Female
Heidelberg Pedagogical Academy	44	33
Bonn Pedagogical Academy	10	52
University of Heidelberg	5	7
Total	59	112

TABLE 79

Number of German Subjects in Elementary or Secondary Education

University	Elementary	Secondary
Heidelberg Pedagogical Academy	92	6
Bonn Pedagogical Academy	62	0
University of Heidelberg	0	12

TABLE 80

Religion of German Subjects

University	Catholic	Lutheran	Left Blank	Deist
Heidelberg Pedagogical Academy	22	70	6	
Bonn Pedagogical Academy	14	45	2	1
University of Heidelberg	5	7		

German by a student in the Languages Department at Utah State University. Dr. Hofmann, who was born and raised in Germany, coming to this country in the early 1950's after taking his Ph.D. at the University of Heidelberg and working in Germany as a school psychologist, reviewed the translation. His verdict was that the translated test battery was a passable example of formal language, but that, along with some translating errors, it also lacked colloquial usages that would make it meaningful to native Germans. Consequently, he spent several hours in revising the translation.

Again, the test was administered as one battery to students in their regular classes. (Stencils of the test were typed at Utah State University and sent to Germany where multiple copies of the test and answer sheet were run off. Then, to save mailing costs again, only the answer sheets were returned to U.S.U. where they were scored.)

Evidence that the test was adequately translated, or at least that it made sense to the German subjects, is provided by the reliability coefficients (split-half, corrected with the Spearman Brown Formula) obtained for the German sample: F-Scale, r = .76; D-Scale, r = .84; R-Scale, r = .79.

Results

The correlations among the three scales, age, and sex are presented in Table 81. They are remarkably close to those for the American sample (Table 17). There is no basis for concluding that either age or sex is related to F, D, or R scores; and the correlations among the three personality variables are almost identical to those for the American sample.

TABLE 81

Correlations Among F-, D-, and R-Scale Scores, Age, and Sex for the Total German Sample (N = 172)

	1	2	3	4
1. Age				
2. Sex	.24			
3. F-Scale	.14	.02		
4. D-Scale	.01	.03	.69	
5. R-Scale	.06	.06	.50	.49

The analyses of primary interest are those comparing the total American and German samples. These are presented in Table 82. The German mean is significantly higher on each of the three scales. The extremely large difference on the F-Scale tends to confirm the authoritarian stereotype. The

TABLE 82

Analyses of Variance for F-, D-, and R-Scale Means of German and American Subjects[a]

F-Scale

Group	N	Test Mean	Item Mean	S.D.	F-Ratio*
German	172	107.53	3.84	18.84	
American	1121	88.37	3.15	21.21	125.29**

D-Scale

Group	N	Mean	S.D.	F-Ratio*
German	172	146.52	23.94	
American	1121	141.35	23.83	6.99**

R-Scale

Group	N	Mean	S.D.	F-Ratio
German	172	90.23	16.82	
American	1121	86.62	15.88	7.58**

[a] University of Washington, University of Michigan, Utah State University Graduate students, and Peace Corps subjects excluded

* d.f. = 1/1291

** For d.f. = 1/1000, $F_{.05} = 3.85$, $F_{.01} = 6.66$

magnitude of the F-Scale difference, as compared to that for the Dogmatism Scale, lends some confirming weight to Rokeach's claim that the two scales measure different attributes. Especially, given the common view of the German subculture as being conservatively authoritarian, does this finding support the contention that the F-Scale measures conservative authoritarianism while the D-Scale measures general authoritarianism. Of course, this argument is basically circular, as the tests are used to verify a common stereotype and acceptance of the stereotype is then used as evidence for validity of the tests.

It is interesting to contrast the 3.84 item mean for this German sample with that of 5.26 for Cohn and Carsch's (1954) sample of German workers. Cohn and Carsch did report that 117 of their workers who had attended the Volkschule, or the Volkschule and the Mittelschule, had a mean of 5.40, as compared to a mean of 4.57 for those who had attended the more advanced Hochschule. The difference between the means was significant at the .01 level, indicating a negative relationship between F-Scale scores and educational level. There is, however, considerable distance between the 4.57 mean of their lowest group and the 3.84 mean of the teacher education sample for this study. This difference might not have existed with a sample of college students taken at the time of the Cohn and Carsch study. It is, of course, impossible to tell whether the striking difference between the earlier worker sample and the present student sample is due to actual differences, still present in Germany, between the authoritarian bents of workers and college students, or whether it represents a shift over time toward lower authoritarianism in the German culture. It also is possible that the central tendency of German university students has remained constant and lower than that for workers during the period of time from the Cohn and Carsch study to the present study, but that the mean for students in teacher education was lower at both points. Our data do not bear on that possibility.

In regard to the stereotype of German authoritarianism, it is interesting to compare the German F-Scale item mean of 3.84 for the present study with the nine means for American students reported in Table 1. The range of those five means is 3.30 to 4.54, with a median of 3.57. The German mean, although above the median, is .70 below the highest of the American means. Variability in the time of the samplings and possible biases in comparing general student samples against samples of teacher education students make it difficult to give much credence to any comparison of the German means and the American means in Table 1. Yet, it does seem clear that German university students, in teacher education at least, are not strikingly authoritarian as compared to several samples of American university students.

Elementary-Secondary Comparisons

The German sample is heavily dominated by students in elementary teacher education--154 to 18. This discrepancy in numbers, especially the small numbers of secondary education students, made comparisons between the two groups less meaningful than would have been ideal. Nevertheless, differences between the means of the two groups on the F-, D-, and R-Scales were tested for significance. The results are presented in Table 83. The lack

TABLE 83

Analyses of Variance for F-, D-, and R-Scale Means
of German Subjects in Elementary
and Secondary Education

F-Scale

	N	Mean	S.D.	F-Ratio*
Elementary	154	107.39	18.56	
Secondary	18	108.78	20.56	.087**

D-Scale

	N	Mean	S.D.	F-Ratio*
Elementary	154	146.49	23.45	
Secondary	18	146.78	27.17	.0017**

R-Scale

	N	Mean	S.D.	F-Ratio*
Elementary	154	90.00	16.83	
Secondary	18	92.17	16.24	.267**

* d.f. = 1/170

** For d.f. = 1/200, $F_{.05} = 3.89$, $F_{.01} = 6.76$

of significant differences is parallel to the finding that, generally, American elementary and secondary education students did not differ on the three scales.

Comparisons between total university groups did not seem appropriate, given the small sample from the University of Heidelberg and the small number of secondary education students--6 from the Heidelberg Pedagogical Academy and none from the Bonn Pedagogical Academy. However, to gain some knowledge of the effect of samples from different institutions of higher education, the mean socres of the elementary education students from the Heidelberg and Bonn Academies were compared. The results of these analyses are presented in Table 84. None of the differences between the means was significant. Although at least one other study (Kassarjian, 1966) has found differences between students from different German universities on a personality measure (inner-outer directedness), the limited data of this study indicate no basis for expecting differences in authoritarianism, dogmatism, or rigidity in samples drawn from the two academies involved. This, of course, is in direct contrast with the results obtained in comparing samples from different American universities. The German finding may be due to the more proportional distribution of religious faiths than was true with the American samples, or it may simply be that German university students are more homogeneous on the traits measured. More data--broader samples including other higher education institutions in Germany--are needed to provide an answer.

Religion

Teaching major comparisons could not be carried out because few of the students indicated majors. This reflects the predominance of elementary education students in the total sample. One other comparison is of interest, however--that between religious groups. As pointed out earlier, only two religious faiths, Catholics and Protestant-Lutherans, were represented in the sample, although a number of subjects left the space for religion blank. The differences among these three groups were significant for the F-Scale and the Dogmatism Scale (Table 85), but not for the R-Scale. In both cases of significant differences, the descending order of means was Catholic, Lutheran, "Left Blank." In the case of the D-Scale (Table 86), the Catholic mean was higher than the mean for each of the other groups; with the F-Scale, the Catholic-Left Blank matching produced the only significant mean difference. With neither scale was there a significant difference between the Lutheran and "Left Blank" means.

Even with the significant differences between the total German and American samples on the scales, one of the three religious groupings in the German sample might have had a mean comparable to that of the analogous American group. Inspection of the means for comparable groups (Table 87) makes it clear that for each of the three groups there are large differences on the F- and the D-Scales between those in the American and German samples. Although the differences are present for the R-Scale, they are not so striking. In short, sampling from different religious affiliations is likely to have a significant biasing effect in Germany as in America; and for the given religious categories, it is likely that Germans will have higher mean F-Scale and Dogmatism Scale means than will Americans.

TABLE 84

Analyses of Variance for F-, D-, and R-Scale Means of Elementary Education Students from the Heidelberg and Bonn Pedagogical Academies

F-Scale

Academy	N	Mean	S.D.	F-Ratio*
Bonn	62	109.26	15.22	
Heidelberg	92	106.13	20.41	1.04**

D-Scale

Academy	N	Mean	S.D.	F-Ratio*
Bonn	62	142.53	19.29	
Heidelberg	92	149.15	25.54	2.97**

R-Scale

Academy	N	Mean	S.D.	F-Ratio*
Bonn	62	90.53	15.82	
Heidelberg	92	89.10	17.45	.23

* d.f. = 1/152

** For d.f. = 1/150, $F_{.05}$ = 3.90, $F_{.01}$ = 6.81

TABLE 85

Analyses of Variance for F-, D-, and R-Scale Means of German Subjects Grouped by Religion

F-Scale

	N	Mean	S.D.	F-Ratio*
1. Catholic	41	112.54	17.70	
2. Lutheran	122	106.73	19.17	
3. Left blank	7	95.28	7.99	3.09**

D-Scale

	N	Mean	S.D.	F-Ratio*
1. Catholic	41	158.07	21.30	
2. Lutheran	122	143.55	23.78	
3. Left blank	7	133.14	18.29	7.24**

R-Scale

	N	Mean	S.D.	F-Ratio*
1. Catholic	41	92.24	18.50	
2. Lutheran	122	89.75	16.29	
3. Left blank	7	90.14	14.64	.33**

* d.f. = 2/167

** For d.f. = 2/150, $F_{.05} = 3.06$, $F_{.01} = 4.75$

TABLE 86

Mean Differences on the F- and D-Scales for German Subjects Grouped by Religion

F-Scale

		1	2	3
Catholic	1		5.81	17.25*
Lutheran	2			11.44
Left Blank	3			

D-Scale

		1	2	3
Catholic	1		14.52*	24.93*
Lutheran	2			10.41
Left Blank	3			

* Significant at the .05 level, Duncan's New Multiple Range Test

TABLE 87

F-, D-, and R-Scale Means of Comparable American and German Religious Groups

Religion	F-Scale American	F-Scale German	D-Scale American	D-Scale German	R-Scale American	R-Scale German
Catholic	85.23	112.54	136.00	158.07	87.55	92.24
Lutheran	84.80	106.73	137.29	143.55	84.95	89.75
Left blank	83.21	95.28	131.94	133.14	82.79	90.14

VII: THE STUDIES: SYNOPSIS AND CONCLUSIONS

The research reported in previous chapters stems from three related problems: (1) The lack of information about the relations of open-closed mindedness (dogmatism, authoritarianism, and rigidity) to reactions to a social studies methods course focused on the examination of curricular issues; (2) The lack of information about the possible biasing effects of drawing samples of teacher education students from different groups, subcultural and educational; and, (3) The lack of information about the comparative central tendencies on measures of authoritarianism, dogmatism, and rigidity of teacher education students in the United States and in Germany.

The Methods Course Study

In an attempt to find answers to the first question, a correlational study was carried out with three social studies methods classes at Utah State University. These classes were administered the F-Scale, the Dogmatism Scale, and the Gough-Sanford Rigidity Scale. Two classes also took the Otis Quick-Scoring Mental Abilities Test. Dependent variables included the students' ratings of the instructor on the University of Washington Survey of Student Opinion of Teaching, course grades, scores on a multiple-choice test, and scores on the Social Issues Analysis Test, No. 1.

The ratings of the instructor by his students showed no consistent relationships with the students' scores on the F-, D-, and R-Scales. Moreover, none of the three personality scales was significantly related to the learning criteria. There were consistently negative correlation coefficients for the multiple-choice test and the three scales. These were about of the magnitude of coefficients between authoritarianism and dogmatism reported as significant in studies with larger samples, but the amount of variance explained is so slight as to be of little educational import. The three personality measures also showed consistently negative, but nonsignificant, correlations with the Otis I.Q. scores.

The Teacher Education Study

Data relevant to the second question (having to do with the possible biasing effects on dogmatism, authoritarianism, and rigidity scores of variations in other sample characteristics) were gathered from teacher education students on a number of campuses. Included were undergraduates from Utah State University, The Ohio State University, the University of California at Santa Barbara, the University of Oklahoma, and Boston University. Samples beyond the undergraduate years came from Harvard University, the University of Washington, the University of Michigan, and Utah State University. And, a sample of Peace Corps trainees on the Utah State University campus was included. Each student in the samples took the F-, D-, and R-Scales, and in addition indicated his religious affiliation, age, sex, class in school, teaching major, and whether he was in elementary or secondary education. There were proportionately more females in the total sample, in part because the total sample contained more elementary than secondary education students.

In addition, the Utah State University and The Ohio State University samples were considerably larger than the others.

Age and year in college were only negligibly related to F, D, and R scores, although the coefficients were significant in two instances. The correlations among the F-, D-, and R-Scales were moderate to high, and within the range previously reported in the literature.

A major question was whether there would be significant differences among the means of the different university samples. It was noted that the variances of the various subgroups were frequently heterogeneous, but under the assumption that the F-Test is a robust statistic, analyses of variances were computed and reported. Significant differences were found on each of the three personality measures. In addition, many of the pairs of means were significantly different. The Peace Corps sample was included in the analysis of university sample means, and the Peace Corps mean was second lowest (the Harvard mean was lower) on each of the three scales. It is no surprise, then, that the Peace Corps mean was significantly lower when compared to the scale means for the pooled university sample.

Analyses of the differences among various religious groups added confirmation for the supposition that authoritarianism is related to religious fundamentalism. The Utah Mormon sample had the highest F-Scale mean and the means of four other fundamentalist groups clustered at the top of the distribution, while the means of agnostics, Unitarians, and those subjects who indicated that they had no religion clustered at the bottom. Basically the same findings were repeated with the Dogmatism Scale. The relationship between religious fundamentalism and dogmatism was positive, rather than curvilinear as Rokeach has predicted it would be. There was a considerably different order of means for the R-Scale, although the same three religious groups maintained their position at the bottom of the distribution of means.

The comparison of means for five groupings of religious faiths (Mormon, Protestant, Catholic, Jewish, and disclaimers of religious affiliation) led to results similar to those summarized in the previous paragraph. The differences among the means were significant with all three scales, with the Mormon mean highest and the "disclaimer's" mean lowest. When the means for the Mormon sample were compared against those for the pooled non-Mormon samples, significant differences were found for the F- and D-Scales, but not for the R-Scale. With the Utah State University campus sample, however, the only significant difference between Mormons and Non-Mormons was on the F-Scale. Comparison of Jewish samples from three different universities yielded significant differences among F-, D-, and R-Scale means. The means for Catholic groups from different universities were significantly different on the F- and R-Scales, while Methodists from different universities showed a significant difference only on the R-Scale. There was no significant difference among Presbyterian subjects from three universities.

The different religious faiths in our total sample were fairly evenly distributed between elementary and secondary education majors. Testing for the significance of differences between the F-, D-, and R-Scale means of elementary and secondary majors in the total sample revealed none that was significant. In only one instance was there an intra-university difference that was significant; the University of California at Santa Barbara elementary and secondary education students had significantly different means on the F-Scale.

The F-, Dogmatism, and R-Scale means of different teaching major groups were also checked for the total sample and within each university sample. There was a significant difference among the teaching major groups for the total sample on each of the three personality scales. However, many of the differences were not significant in the intra-university comparisons. The possible confounding of subcultural (i.e., religious) differences with teaching major differences, especially in the total sample, was discussed in the section reporting teaching major findings.

The German Study

Samples of German students were obtained from three institutions--the University of Heidelberg, the Heidelberg Pedagogical Academy, and the Bonn Pedagogical Academy. The total sample was, as with the total American sample, made up heavily of females and elementary education students.

The correlations between age and the three personality scales were low and nonsignificant, while the correlations among the three scales were of about the same magnitude as for the American sample.

Differences between the F-, D-, and R-Scale means of the American and German samples were significant, with the authoritarianism difference the greatest. There were no significant mean differences between the German elementary and secondary education subjects, nor between the German elementary education students from the Heidelberg and Bonn Pedagogical Academies. The lack of secondary education majors made impossible the comparison of teaching major means. However, the means among the three religious groups represented (Catholics, Protestant-Lutherans, and those who left the space for religion blank) were significant on the F- and Dogmatism Scales.

Conclusions

Keeping careful sight of the sampling restrictions which have been noted throughout this report, what conclusions can be drawn? In the first place, as a major point of concern to educational and psychological researchers, it seems clear that the religious makeup of samples of teacher education students is one subcultural variation likely to have an impact on the estimates of authoritarianism, dogmatism, and/or rigidity obtained. Moreover, effects are not only likely to appear from one religious faith to another, but between subjects from different universities who claim affiliation with the same faith.

Research designs often presume a full range of scores on measures such as the F-, D-, or R-Scales, as for example, when high or low groupings from different studies are assumed to be comparable. Often, too, there is reason to expect that level of authoritarianism, dogmatism, or rigidity will interact with other factors in affecting performance on a dependent variable. In such cases, careful attention to religious affiliation as one factor to consider in drawing samples could help to avoid disparities in findings from one study to another.

As the review of research indicated at several points, research using the F- and Dogmatism Scales has been plagued by inconsistent findings. More careful attention to sample characteristics, along with more uniform definition of experimental conditions and dependent variables, could contribute a great deal to building the consistency necessary before the authoritarianism and dogmatism measures can be of much use in applied areas such as teacher selection and education.

The study in teacher education involving the social studies methods course which is reported in Chapter IV is a case in point. As is frequently the case with exploratory studies, the independent variable (course content and teacher behavior) was not behaviorally defined and verified, nor were the dependent variables (measures of learning) as well developed and related to course objectives as might have been desirable. If significant results had emerged (it will be recalled that the F-, D-, and R-Scale scores of the students did not bear any consistent relationship to student evaluations of the instructor or to the learning criteria), a more carefully designed study would have been in order to isolate the effects. However, it is possible that significant differences would have been found had a more rigorous design been used initially. In addition, there is at present no way of knowing what the effects on the findings were of using a sample that was heavily dominated by a religious group (Mormons) whose central tendency on the F-, the D-, and the R-Scale was at the top of each distribution of means for various religious groups.

On the other hand, although our comparisons of teacher education students from different universities did confirm the importance of religion as a sampling variable, the data provided little evidence to support the notion that age, class in college, sex, or commitment to elementary or secondary education are potent variables for anticipating variability in authoritarianism, dogmatism, or rigidity in samples of teacher education students. Although this conclusion holds in general, there was some evidence that a researcher could not be certain that a factor such as commitment to elementary or secondary education would not be related to scores on the personality measures in a sample from any specific university campus.

Teaching major would seem, at least on the surface, to be related to F, D, and R scores, and thus a matter for consideration in drawing teacher education samples. However, the teaching major comparisons were, to some extent, confounded with religious groupings in our "national" sample, and further research is needed to determine if the relationships between teaching major and F, D, and R scores are independent of religion. It does seem clear that the effect was not the reverse; that is, the differences among religious groups were probably not due to any religious groups being dominated by particular teaching majors.

Considerable validating evidence for the F-Scale has come from the data of this study. The generally negative relationship between F-Scale means and religious fundamentalism corroborates both the theoretical position presented in *The Authoritarian Personality* and the various studies on religion and authoritarianism carried out since 1950. By the same token, the dramatic difference between the German and American samples on the F-Scale provides evidence of construct validity, given the stereotype of an authoritarian German culture. As noted, however, this particular argument smacks of circularity, as must always be the case with construct validity where the theoretical psoition dictates both the measure and the nature of the validating groups.

The validity of the Dogmatism Scale did not fare so well. It is clear that the F- and D-Scales are highly related, both as a result of the high intercorrelations between the two measures and the similar results with the two scales which emerged from the analyses of variance. The differing results in the German-American comparisons, with the F-Scale producing a much greater difference between the two samples, does lend some credence to claims for the D-Scale's validity. If the F-Scale is measuring conservative authoritarianism, these data suggest that the Dogmatism Scale is measuring something else, perhaps general authoritarianism. However, the results coming from the comparison of religious groups indicated that both the F-Scale and the Dogmatism Scale are positively related to religious conservatism. An increase of dogmatism scores for extreme religious liberals did not occur, as Rokeach has contended it should. This may, of course, mean that the test is invalid or that our sample did not contain adequate representation of extreme religious liberals.

It should also be noted that low intercorrelations and differing results when the means of subsamples were compared have provided further confirmation of the general independence of scores on the Gough-Sanford Rigidity Scale and scores on the F- and Dogmatism Scales.

Finally, a matter of much concern to teacher educators should be commented on. Inspection of the mean F- and Dogmatism Scale scores of the teacher education students in the "nationwide" sample of this study as against those reported for university students in earlier studies provides no evidence that students in teacher education are more authoritarian or dogmatic than university students in general. Obviously, this conclusion must be taken with a great deal of caution. The findings may be due to the particular subgroups of teacher education students sampled for this study or to a general reduction in authoritarianism and dogmatism in this society over the few years between earlier studies and the present one. However, neither consideration seems likely to contradict the conclusion as further data become available.

As has been indicated by the sections of the review of research dealing with the relationships of authoritarianism and dogmatism to attitudes toward children and discipline and to critical thinking, there would be cause for concern if teachers were indeed extremely authoritarian or dogmatic. However, in view of the comparative scores of the teacher educators in this study and those of general university samples in previous studies, perhaps it is time that teacher educators became less concerned about whether their students are generally more authoritarian or dogmatic than other college students, and turned their attention instead to identifying which people who select teaching for a career are most likely to score high on these attributes.

Undoubtedly, many individuals select teaching as a career because it affords security and an opportunity to exercise control; but it also seems evident that many people are attracted to teaching because of the opportunities for social service and intellectual challenge in working with young people during their years of formal schooling. Methods for screening out the former and attracting more of the latter to teacher education could make a major contribution to upgrading public school education in this country.

Whatever the thrust of future research in teacher education using the F- and Dogmatism Scales--whether it involves investigation of the potentials of selection based on traits of authoritarianism and dogmatism or probing modifications in teacher education programs to contravene closed minded tendencies among classroom teachers--the present research suggests that researchers must show concern for the variability in dogmatism and authoritarianism among subcultural groups. Without careful attention to research design, including the problem of obtaining adequately representative or random samples, the present inconsistencies in research findings will persist, and a substantial body of confirmed knowledge about authoritarianism and dogmatism as factors in the educational process will still be lacking after many more years of research.

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